

# ENVIRONMENTAL ASSESSMENT BOARD



## ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

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**VOLUME:** 76

**DATE:** Tuesday, October 29, 1991

### **BEFORE:**

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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ENVIRONMENTAL ASSESSMENT BOARD  
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,  
R.S.O. 1980, c. 140, as amended, and Regulations  
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro  
consisting of a program in respect of activities  
associated with meeting future electricity  
requirements in Ontario.

Held on the 5th Floor, 2200  
Yonge Street, Toronto, Ontario,  
on Tuesday, the 29th day of October,  
1991, commencing at 10:00 a.m.

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VOLUME 76  
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1        ---On commencing at 10:04 a.m.

2                    THE REGISTRAR: This hearing is now in  
3                    session, please be seated.

4                    THE CHAIRMAN: Mr. Moran?

5                    MR. MORAN: Thank you, Mr. Chairman.

6                    KEITH DOUGLAS BROWN,  
7                    PAUL FRANK VYROSTKO,  
7                    JOHN KENNETH SNELSON; Resumed

8                    CROSS-EXAMINATION BY MR. MORAN (cont'd):

9                    Q. Good morning, Panel.

10                  Just picking up where we left off  
11                  yesterday, I take it that we can agree that there is a  
12                  role for high-efficiency cogeneration to play in  
13                  reducing air emissions due to electricity generation as  
14                  a general principle, at least.

15                  MR. SNELSON: A. Yes.

16                  Q. I take it from the evidence that you  
17                  gave yesterday, that at this stage at least you don't  
18                  know the parameters of that role, but you have included  
19                  it on the basis of having made a judgment call along  
20                  those lines?

21                  A. No. I think we have accounted in our  
22                  avoided cost for the value of its role in reducing air  
23                  emissions, and that's reflected in the way in which we  
24                  do business with the non-utility generation.

25                  Q. Is there anything that you can draw

1 to the Board's attention that would show that  
2 accounting?

3 A. Yes. At the time that Exhibit 3 was  
4 prepared, which was in the Demand/Supply Plan Report,  
5 in Chapter 16, I believe, page 16-8, figure 16-4, and  
6 that is at the top left-hand corner of the page, and in  
7 that figure is separately identified as part of the  
8 system incremental cost, a cost for a scrubber adder of  
9 0.6 cents per kilowatthour which is a specific  
10 allowance for the value of reducing acid gas emissions.

11 In later versions of avoided cost, that  
12 same approach has been adopted and I believe the number  
13 is somewhat higher now.

14 Q. And that has in fact been added into  
15 the avoided cost when you were trying to establish what  
16 the purchase rates should be for NUGs, particularly  
17 high-efficiency cogen?

18 A. That is a part of the avoided cost  
19 when coal-fired generation is presumed to be the fuel  
20 that is being avoided.

21 Q. Okay. And, Mr. Brown, in terms of  
22 the total emissions that we could expect from  
23 non-utility generation that uses combustion, we will  
24 have to wait for the 1991 NUG plan to see those kinds  
25 of figures.

MR. BROWN: A. Those are for the '89 plan provided in figure 4.1 of the environmental assessment.

Q. You made reference yesterday to some air emission figures that why going to be included in the 1991 NUG plan.

A. We were going to update figure 4.1 in the 1991 plan.

Q. Is that going give us a total picture of expected air emissions from non-utility generation.

A. Based on the information we have on general emissions from high-efficiency cogen. yes.

Q. When do we expect that to be available?

A. I would say December, by year end.

Q. The reason I ask is I think earlier on I think there was some indication it might be October.

A. It's normally the numbers are available in late October, early November. That's not the case this year.

Q. I would like to move to the next area under this category and talk a little bit about hydraulic non-utility generation. You will agree that small hydraulic stations can have a variety of impacts

1 on rivers, I assume.

2 A. This is discussed in the  
3 environmental section, yes.

4 Q. Okay. Now, Hydro, as I understand  
5 it, screens out hydraulic sites that it itself is  
6 interested in on the basis, at least using one factor  
7 called severe environmental impacts. There are other  
8 factors, I understand as well, but that's one of the  
9 factors that is used for screening down the total  
10 inventory of hydraulic sites that Hydro would want to  
11 develop.

12 Is there any similar process used when  
13 you are looking at hydraulic non-utility generation?

14 A. I use the same factors. The numbers  
15 I am using to estimate the technical potential for  
16 small non-utility generation hydraulic is based on the  
17 numbers that are produced in Exhibit 28, the hydraulic  
18 plan.

19 Q. Mr. Brown, are you saying that you  
20 have an equivalent kind of list that we see in the  
21 hydraulic plan for non-utility generation hydraulics?

22 A. I am saying that the sites that are  
23 excluded by Ontario Hydro are the same ones that I  
24 excluded.

25 Q. I see. You don't exclude any other

1       sites other than the ones that Ontario Hydro has  
2       specifically excluded under its own hydraulic plan?

3                   A. That's correct.

4                   Q. So, in other words, the answer to my  
5       question is, no you don't do a similar kind of process  
6       for non-utility hydraulic sites?

7                   A. I do the same process.

8                   Q. Nothing extra, though. You are just  
9       taking what has been excluded?

10                  A. That's correct.

11                  Q. Okay.

12                  THE CHAIRMAN: But their assessment is  
13       based on the entire potential in the province which is  
14       then brought down, so that the same sites are excluded,  
15       as I understand the evidence. There would be no more  
16       to exclude.

17                  MR. MORAN: Q. As I understand it,  
18       Ontario Hydro goes through its screening process  
19       because there are certain sizes of sites that it is  
20       interested in, and it's interested principally in sites  
21       that are much larger than sites that would otherwise be  
22       suitable for non-utility generators to utilize, right?

23                  MR. BROWN: A. I think if you wait until  
24       Panel 6 there will be a better definition of why sites  
25       are excluded, but size was not the only factor.

1                   Q. I would like to draw your attention  
2 now to Interrogatory 5.32.22.

3                   Perhaps we could get a number for that,  
4 Mr. Chairman.

5                   THE REGISTRAR: That will be 321.61.

6 ---EXHIBIT NO. 321.61: Interrogatory No. 5.32.22.

7                   MR. MORAN: Q. Again, this is a very  
8 short question and answer. The question was:

9                   A fuller discussion of the potential  
10 environmental limitations or constraints  
11 of the potential NUG contribution and an  
12 examination and assessment of the  
13 advantages and disadvantages of NUGs in  
14 terms of the social and environmental,  
15 taking into account long-term costs and  
16 impacts.

17                   Response: The 1990 NUG plan assumes  
18 that all NUG projects will meet  
19 environmental standards. No studies have  
20 been done to quantify the potential  
21 environmental limitations or the social  
22 advantages and disadvantages of NUGs.

23                   Is that the response you would give with  
24 respect to the 1991 NUG plan?

25                   MR. BROWN: A. We are adding a section

1 to the 1991 NUG plan to look at the environmental  
2 impacts of the components of the plan.

3 Q. Okay.

4 A. It would be very similar to that  
5 provided in the environmental assessment report.

6 Q. So we will have to wait and see that  
7 report then.

8 A. Yes.

9 Q. We have so far looked at three areas  
10 that involve government regulation, there was the  
11 safety factors, as well as environmental impacts due to  
12 hydraulics and due to the remainder of non-utility  
13 generators.

14 You will agree that essentially that  
15 government is responsible for enforcing its own  
16 regulations. It's not a controversial statement,  
17 right?

18 MR. VYROSTKO: A. I would agree with  
19 that.

20 Q. And you will agree that basically  
21 government regulations kick in once you have a  
22 committed project underway, right?

23 A. I think that the actual obligation  
24 would start to occur after the project has been  
25 committed and the project gets underway, although I

1       would think that a lot of the regulations and  
2       discussions about the regulations would occur prior to  
3       that.

4                   Q. And a lot of these discussions would  
5       primarily be perhaps between Hydro and the non-utility  
6       generator as opposed to government and the non-utility  
7       generator, at least at the preliminary stage, right?

8                   A. I think the preliminary stage would  
9       be where we would be identifying some of the  
10       requirements, the permits and licences that we think  
11       would happen.

12                  The proponent would then be going to the  
13       government, in some cases even before they get into  
14       fuller discussions with us, to get a reasonable  
15       expectation for themselves that the project can in fact  
16       meet the necessary requirements.

17                  Q. You will also agree that as a general  
18       rule you really don't want to get involved in  
19       negotiations except for projects that are at least on  
20       their face reasonable ones or fairly likely to be  
21       successful ones, right? You don't want to waste the  
22       time and effort otherwise.

23                  A. Our expectation would be that we  
24       would be dealing with projects that can in fact meet  
25       all of those regulations.

1 [10:15 a.m.]

2 Q. Okay. And you will agree that you  
3 would prefer to get involved only in those kind of  
4 projects rather than wasting time and effort  
5 negotiating over others that perhaps are not going to  
6 be that successful?

7 A. Yes, we would prefer to deal with  
8 those that we think can in fact become technically and  
9 economically viable.

10 Q. And if you are dealing primarily with  
11 projects that stand a good chance of success, you will  
12 agree that that will make the forecasting process a bit  
13 easier and perhaps more accurate, Mr. Brown, right?

14 MR. BROWN: A. Those factors are already  
15 incorporated into my forecast.

16 Q. I believe you indicated that you have  
17 a one out of five success rate at this point, earlier  
18 on.

19 A. Sorry. Not my success rate. I was  
20 saying that there are project proposals that come to  
21 Ontario Hydro, in the past on average one in five have  
22 been committed.

23 Q. That's what I meant too, okay. I  
24 didn't mean that you were to blame personally for the  
25 failure of the other four.

1                   I guess my question that I'm leading up  
2 to then is whether there is a role for Ontario Hydro to  
3 play in terms of having a better organized approach to  
4 educating potential proponents about the regulatory  
5 regimes and so on to ensure perhaps a better success  
6 rate than one in five?

7                   A. Maybe I should just start by saying  
8 that the one in five isn't just because of education,  
9 it may be just straight economics. The proponent isn't  
10 really aware of Hydro's avoided cost or what he is  
11 going to get for his proposal when he initially submits  
12 it, so a lot of the factors are economics not  
13 environmental.

14                   In terms of education I think we do a  
15 lot, and Mr. Vyrosto can add some of the factors we  
16 do, but we provide pamphlets. We have provided  
17 workshops where we invite participants and a lot of the  
18 effort is in the area of environment. We have helped  
19 the Independent Power Producers Society of Ontario in  
20 establishing an environmental committee where they can  
21 get involved because it is of major concern for this  
22 industry. And we have information on our front display  
23 to help them as well and we always tell them to visit  
24 the government where there is any questions.

25                   Q. Do you have any kind of breakdown

1 relating to those proposals that didn't make it that  
2 would indicate how many couldn't make it for economic  
3 reasons as opposed to perhaps failure to meet with  
4 regulatory requirements? From my point of view at  
5 least, it would appear that failure to meet regulatory  
6 requirements impinges directly upon the economics of  
7 the project. Do you have a more sophisticated  
8 breakdown than just that?

13 Q. And from looking at those projects,  
14 you are not able to determine yourselves what the  
15 reasons might be for that kind of withdrawal?

16 A. No, in many cases we can't.

17 Q. The next area I would like to turn  
18 to, I am referring to is sector viability.

19 Cogeneration typically as you have indicated goes hand  
20 in hand with industrial enterprises, and I believe  
21 three kinds have been mentioned so far: the pulp and  
22 paper sector, the chemical sector and the mining  
23 sector.

24 Will you agree that in order to assess  
25 the reliability of cogeneration projects in these

1       sectors, and perhaps others, that it's useful to have  
2       an idea about the particular industry and how it  
3       performs?

4                    MR. BROWN: A. In terms of negotiating  
5       contract and in terms of forecasting, you have to have  
6       a pretty good feel for what is involved with the  
7       industry, current activities, and the long-term outlook  
8       of that industry.

9                    Q. You have indicated that most of the  
10       contracts in this area are about 20 years long, 15 or  
11       20 years; right?

12                  A. For cogeneration that's a typical  
13       length.

14                  Q. And if we look at the last 20 years,  
15       I think we can agree that there has been at least two  
16       recessions. How do things like that get factored into  
17       your assessment of the long-term performance of  
18       proposals that are put into you?

19                  A. In general, the economy itself is not  
20       a direct factor in the forecast. Where it does come to  
21       play is where we are using project data because if the  
22       industry is currently weak, we are getting less  
23       proposals and are more concerned with keeping the  
24       business running than in building a cogeneration site.  
25       So that it would be a decrease in activity which would

1 have an impact on the forecast.

2 Q. Do you have any in-built auditing or  
3 checking process that allows you to follow up once you  
4 do have committed NUGs to ensure that they are  
5 performing at least within expectations?

6 A. In terms of a contract we pay for  
7 performance, so that's a primary measure of checking up  
8 on how well they are doing.

9 Q. Presumably, when you are paying  
10 things out you will notice if they are not up to  
11 scratch. I guess I am more interested in what you  
12 would do in advance of that that might try and  
13 determine what kinds of problems are beginning to  
14 develop as opposed to when they have actually happened.  
15 Do you have any kind of auditing process of that kind?

16 MR. VYROSTKO: A. Currently we do not  
17 have any auditing process. Through the normal building  
18 mechanisms that we have with respect to monthly  
19 records, we have a sense of how well the individual  
20 project is performing. And we are, as Mr. Brown said  
21 previously, we are in the process of developing a  
22 reliability data base to give us an expectation as to  
23 how well they are in fact performing relative to what  
24 they said they were going to.

25 Q. You will agree that with an expanding

1       NUG program it is becoming more important to track  
2       reliability overall if the system is going to rely on a  
3       greater amount of NUGs; right?

4                   A. Yes. And that's why Mr. Brown is  
5       proceeding with that responsibility.

6                   Q. What role does insurance play in  
7       ensuring that your NUGs will continue to produce  
8       electricity over the long term?

9                   Let's say in a particular project, they  
10      are getting into some sort of difficulty for one reason  
11      or another. Is there any role at this point in any of  
12      your current projects for insurance? Is there  
13      insurance policies in place to ensure the long term  
14      viability of at least the NUG part of the project?

15                  A. Insurance from the private sector?

16                  Q. Yes. Do you have any requirements  
17      for insurance?

18                  A. We don't have any requirements. I  
19      think that if a proponent were to look at how they  
20      would protect their investment and their overall  
21      long-term assets, I think that would be something that  
22      they would be looking at. But we don't have a  
23      requirement for that.

24                  Q. If you have a greater number of  
25      high-efficiency cogeneration projects out there, you

1 will agree that the risk of failure becomes more  
2 important because you have got a greater number of  
3 projects; right?

4                   A. I would think the more projects you  
5 have there is a less risk of failure with regard to any  
6 one of those projects. So, if you are looking at the  
7 risk of all of the projects failing as opposed to the  
8 one, then I might suggest that your assumption is  
9 correct. But with more projects I would think we have  
10 got diversity there and I think the risk of any one  
11 failing is less.

12                  Q. If we take the pulp and paper sector,  
13 for example, if we have a world-wide slowdown in that  
14 sector, a large number of cogen facilities would be put  
15 at risk, wouldn't they, in a situation like that?

16                  A. If all the companies were facing all  
17 the same pressures and their economics were all  
18 reasonably the same, then they could all be in the same  
19 circumstance, yes.

20                  Q. My question is this then: If you  
21 have that kind of possibility, is there anything in  
22 Hydro's planning that would allow you to meet a problem  
23 like that and ensure that a large section of your NUG  
24 program doesn't slow down or shut down?

25                  A. Again I think the entire value of

1 non-utility generation being spread across all sectors  
2 and being in essence composed of a number of smaller  
3 projects provides some of that assurance because your  
4 scenario is that the pulp and paper industry were to be  
5 suffering and they might be down, but a lot of the  
6 projects are also from other sectors, so they would not  
7 be down typically that so that's one of the values that  
8 non-utility generation brings and that is that it's  
9 spread around.

10 Q. At this point do you have any  
11 requirement for insurance or performance bonds or  
12 anything along those lines?

13 A. No, we do not.

14 Q. Up to now, are there any NUGs that  
15 have been lost due to bankruptcy?

16 A. No, there haven't.

17 Q. And up to now are there any NUGs that  
18 have been lost to premature shut-down for technical  
19 reasons?

20 MR. BROWN: A. There have been  
21 shut-downs and retirements. I can't comment on whether  
22 that is premature or not.

23 Q. Up to now have there been any NUGs  
24 that haven't made it to the end of the 15- or 20-year  
25 contract?

1                   A. No.

2                   MR. VYROSTKO: A. Can I just maybe  
3                   clarify that for a minute. We actually have two types  
4                   of NUGs: those NUGs that have been traditional, the  
5                   long standing NUGs that really don't have contracts  
6                   with us, and then the NUGs that have sort of started as  
7                   a result of our initiatives in the early '80s and  
8                   coming forward.

9                   [10:25 a.m.]

10                  And so we really should be looking at,  
11                  there are two different levels of information. There  
12                  are the traditional ones and the new ones. And so  
13                  maybe our response to the question might be different  
14                  depending on whether we are looking at old traditional  
15                  NUGs versus the new ones.

16                  Q. Do you want to answer the question I  
17                  asked then for those two categories?

18                  A. I believe Mr. Brown was referring to  
19                  retirements and I was talking about the traditional  
20                  NUGs. Because in his plan he in fact tries to forecast  
21                  the retirements of existing NUGs. Those that we have  
22                  contracts with since the early 80s, I don't believe any  
23                  of those have closed down.

24                  Q. Okay, I am going to turn to another  
25                  area now.

1                   You will agree that NUGs, particularly  
2                   hydraulic NUGs in areas of Northern Ontario at least,  
3                   have the potential to have impacts upon Aboriginal  
4                   interests, right, such as fishing and hunting and  
5                   others?

6                   A. That's correct.

7                   Q. And I understand that there has been  
8                   recent changes at the senior level at Ontario Hydro  
9                   where we now have a vice-president who is responsible  
10                  for Aboriginal relations; is that correct?

11                  A. Senior vice-president, yes.

12                  Q. In your part of the corporation, do  
13                  you have somebody who has similar responsibilities with  
14                  respect to the NUG program?

15                  A. Yes. I have someone who is  
16                  responsible for developing programs associated with  
17                  some of the northern communities.

18                  Q. All right. How are Aboriginal  
19                  interests taken into account in the NUG program?

20                  MR. BROWN: A. If it's a private  
21                  developer developing the site, it's his responsibility  
22                  to coordinate his efforts with the Aboriginal concerns,  
23                  and we have had successful projects that have done  
24                  that.

25                  If it's an Aboriginal group that's

1           interested in developing a projects, it's handled a  
2           little differently.

3                   Q. Do you have any particular programs,  
4           Mr. Vyrosto, that are geared specifically towards  
5           assisting or promoting Aboriginal development and  
6           ownership of NUGs?

7                   MR. VYROSTO: A. We are currently  
8           working on a program that was discussed in our direct  
9           evidence called "The Remote Community Program" and that  
10           is aimed at trying to encourage development in the  
11           northern communities, specifically remote communities.

12                   Q. I guess my question was with respect  
13           to Aboriginal ownership and development, do you have  
14           any specific programs geared to that area?

15                   A. We have some initiatives within the  
16           remote communities that are giving us some information  
17           with respect to how we can then move forward and  
18           develop a program for dealing with some of the native  
19           peoples.

20                   Q. So you are in the process of  
21           considering whether a program should be developed then,  
22           is that fair?

23                   A. We are doing some test projects to  
24           give us some information on that, that's correct.

25                   Q. What consideration do you give in

1       this initiative to the fact that some Aboriginal groups  
2       live on reserves and are not able to use reserve assets  
3       as collateral? Do you have any consideration for  
4       financial assistance in situations like that?

5                    MR. BROWN: A. It's not a factor that we  
6       have considered to date. We are in the program looking  
7       at various areas where we can help and we are looking  
8       for their input on what they require to build a  
9       project. That hasn't been an issue that they have  
10      identified to date.

11                  Q. The initiative that you are talking  
12      about now, is that something that's run out of your  
13      branch?

14                  A. The NUG program is being developed in  
15      our branch in consultation with the remote community  
16      office in Thunder Bay and the Aboriginal group at 700  
17      University.

18                  THE CHAIRMAN: I'm sorry, I didn't hear  
19      what you said after Aboriginal group.

20                  MR. BROWN: Our new senior  
21      vice-presidents section.

22                  MR. MORAN: Q. What kind of budget have  
23      you dedicated to this initiative at this point with  
24      respect to the NUG plan?

25                  MR. BROWN: A. Since the program is

1 under development there is no specific set of funds set  
2 aside for that. The work we are doing right now is  
3 just coming under our OM&A. When a program is  
4 developed there will be funds set aside at that time.

5 Q. Okay. I would like to turn now to  
6 the October 18th, 1991 announcement as set out in  
7 Exhibit No. 346. I understand that Exhibit 346 was  
8 actually a handout to the NUG industry on October 18th  
9 as part of a meeting that took place.

10 A. This was handed out to those people  
11 attending, yes.

12 Q. And under the new rules as you have  
13 indicated, you want more dispatchable NUGs as opposed  
14 to what you have traditionally been getting. I just  
15 want to confirm that by dispatchable you are referring  
16 to NUGs that are going to be load-following, which is  
17 another term we have heard from time to time in this  
18 hearing?

19 A. Load-following in my definition is  
20 steam load-following where the cogenerator is following  
21 his own load, not Ontario Hydro's system load.

22 Dispatchability would be following  
23 Ontario Hydro's total load in the province and at the  
24 control of the Clarkson Control Centre, and that may be  
25 different than your definition.

1                   Q. And those kinds of Hydro-owned  
2 facilities would also be called by Hydro load-following  
3 or dispatchable facilities, right?

4                   A. That's one form of dispatch, yes.

5                   Q. I would like to draw your attention  
6 on the second page after the cover page, and we see  
7 some bullets there. The third bullet is the one that I  
8 want to draw your attention to.

9                   In order to not deteriorate power  
10 system operating flexibility, contracts  
11 with larger NUGs need to be structured  
12 for dispatchable deliveries whenever  
13 possible. The economics of dispatchable  
14 NUGs within Ontario Hydro's avoided costs  
15 are uncertain.

16                   Isn't it true that Hydro assigns a high  
17 value to its own load-following facilities?

18                   MR. SNELSON: A. Ontario Hydro must have  
19 the capability to be able to dispatch generation to be  
20 able to meet the load exactly on a day-by-day,  
21 hour-by-hour, minute-by-minute basis. We evaluate  
22 plans to find the lowest cost plan that can achieve  
23 that.

24                   I don't think that we can separately  
25 identify and say, we pay this much for dispatchability

1 from this generating plant and this much for  
2 dispatchability from another generating plant.

3 We do have though specific types of  
4 generation that tend to be used for a more dispatchable  
5 duty than other types, usually the higher fuel cost  
6 types.

7 Q. If you have a plant that operates  
8 only part of the time as opposed to the same plant  
9 operating 100 per cent of the time or up to capacity,  
10 the electricity that's being produced is more valuable  
11 electricity because it's at a higher cost though, isn't  
12 it, for the one that's operating part of the time?

13 A. If it is operating part of the time  
14 under the control of the control centre, so as those  
15 times are chosen to be times of high value then yes it  
16 has a higher value. If it operates part of the time,  
17 the time is controlled in some other way, then it may  
18 have a lower value.

19 Q. And there is an economic value to the  
20 system, isn't there, because overall you can have  
21 reduced generation costs as a result of this more  
22 expensive form of generation; isn't that true?

23 A. I don't think it follows that a more  
24 expensive form of generation lowers costs. But the  
25 peaking type of generation generally has the

1       characteristic of a low capital cost or a low fixed  
2       cost, and that's the characteristic that makes it good,  
3       that it's got a low fixed cost.

4               If it happens to have a high fueling  
5       cost, then that is something can be tolerated as long  
6       as it isn't required to operate too many hours a year.

7               Q. Would that apply to the coal-fired  
8       plants that you use to follow demand?

9               A. The coal-fired plants are best suited  
10       to more an intermediate sort of duty than a real  
11       peaking duty, but they do have a lower capital cost  
12       than some of the other plants on the system like the  
13       hydraulic and nuclear plants.

14               Q. Would you agree that overall though  
15       by having a peaking plant which in itself may be  
16       expensive on a per kilowatthour basis, overall for the  
17       system there is an economic benefit?

18               A. Yes, peaking plants that are operated  
19       a small proportion the time tend to have a higher cost  
20       per kilowatthour, and that is acceptable provided that  
21       they have the characteristics I am talking about of low  
22       fixed costs.

23               Q. Because overall it keeps overall  
24       generation costs as low as possible, right?

25               A. Yes. The generation costs are lowest

1 if the high capital cost, low fuel cost plant is used  
2 base load and the low capital cost, high fuel cost  
3 plant is used as peaking plant.

4 Q. Has that kind of value been factored  
5 in to your consideration of dispatchable NUGs as  
6 described under the new guidelines?

7 A. That kind of consideration is  
8 inherent in the avoided cost calculations that we have  
9 been doing all along.

10 Q. Then when you are talking about the  
11 uncertainties of the economics in this statement, you  
12 must be talking about something else, right?

13 A. I think you are talking about the  
14 next level of uncertainty.

15 Dispatchability has a value that can be  
16 predicted by saying, in this future year I expect the  
17 load to be a certain level, to have a certain pattern  
18 in each hour, and I can evaluate how the system would  
19 operate and what is the value of dispatching to meet  
20 that particular shape of load that is forecast in the  
21 future.

22 Where the difficulty comes is when  
23 uncertainties about the future are factored in and how  
24 the value of the dispatchable plant that's dispatchable  
25 over a wide range compares to something that has a

1 fairly fixed pattern of dispatch.

2 Say, for sake of example, that we were to  
3 specify that the value of a dispatchable plant that  
4 could operate five days a week, 16 hours a day, during  
5 the high load periods, we can predict the value of that  
6 if everything turns out to be as we forecasted.

7 If for some reason conditions are  
8 different and the loads are very low and we don't need  
9 to operate that plant at all, then there is some value  
10 to not having to buy that power at all if you don't  
11 need it, or being able to operate in a case where we  
12 have under-forecast the load, or being able to operate  
13 it base load if we need to.

14 So we can forecast the expected value of  
15 the dispatchability. Our methods of forecasting the  
16 additional value of flexibility to change that pattern  
17 of dispatch is a lot more difficult.

18 Q. How do you plan to allow for that  
19 kind of uncertainty when you come to deal with  
20 proponents who will want to be assured that they are  
21 not in fact going to be throwing their money away 10  
22 years from now because your forecast is perhaps lower  
23 than otherwise expected?

24 A. I think we have to have business  
25 arrangements with the non-utility generator that

1 reflects the realities of his financial structure such  
2 that he gets paid for having available capacity whether  
3 or not it is run, and that has to be sufficient to  
4 cover his fixed costs, and he has to have a separate  
5 charge for energy which is related to his incremental  
6 cost of energy production, and with that sort of  
7 arrangement then the question of dispatch becomes quite  
8 similar to that of an Ontario Hydro plant, and the  
9 proponent is assured of a reasonable financial return  
10 independent of whether or not the system requires him  
11 to be operated a lot or a little.

12 Q. So under this approach in fact  
13 economics would not be uncertain as suggested perhaps  
14 in this document because you would have worked out an  
15 answer to that?

16 A. I think we know some of the answer.  
17 There are complexities in working out that sort of  
18 arrangement and there are complexities in estimating  
19 the value of the ability to change from the operating  
20 pattern.

21 [10:40 a.m.]

22 Q. But in suggesting that there might be  
23 economic uncertainties, these are not things that are  
24 extrinsic to Ontario Hydro, these are things that you  
25 are in fact actively working on to resolve. They are

1       within your control or ability perhaps to resolve?

2                   A. They are things that we are working  
3       on resolving.

4                   Q. One of the reasons I understand for  
5       this change to requiring dispatchable NUGs is the fact  
6       that you are going to have a surplus of, as I  
7       understand it, about 5,000 megawatts over a period of  
8       1997 to the year 2008; is that correct?

9                   A. I think the requirement for  
10      dispatchability is a separate issue.

11                  Q. The requirement for dispatchability  
12      is totally unrelated to the fact that there would be a  
13      surplus during that time frame?

14                  A. I think I said in my direct evidence  
15      that certain types of non-utility generation which  
16      don't lend themselves to dispatch but are preferred  
17      options, such as cogeneration and small hydro, it's  
18      appropriate that we continue to not require a high  
19      degree of dispatchability from those facilities because  
20      they can't easily provide it.

21                  But when we come to facilities that are  
22      not well matched cogeneration or are electricity-only  
23      generating plants and they are operating primarily to  
24      meet the needs of the electricity system, and given  
25      that the industry is becoming more mature and given

1       that the non-utility generation is getting to be a  
2       bigger proportion of the system, then it is vital that  
3       they have the sorts of dispatching capabilities that we  
4       have of our own generation system.

5                   Q. And the main reason for that is  
6       because you anticipate a surplus?

7                   A. No.

8                   MR. BROWN: A. I may add that we want  
9       dispatchability right now. There is no surplus at this  
10      time. Dispatchability is very important in operating  
11      the system throughout the year.

12                  Q. So the 5,000 megawatt surplus that  
13       you anticipate has nothing to do with this requirement  
14       for dispatchability; is that what you are indicating?

15                  MR. SNELSON: A. The requirement for  
16       dispatchability is a system requirement and it would be  
17       a requirement whether or not there was a surplus.

18                  Q. If I may have a moment, Mr. Chairman.

19                  THE CHAIRMAN: Yes.

20                  MR. MORAN: Q. If you are going to have  
21       dispatchable NUGs and if you are going to have  
22       dispatchable Hydro-owned facilities, what kind of  
23       decision-making factors are we looking at when you are  
24       trying to decide whether you should turn off a NUG as  
25       opposed to a Hydro plant?

1 MR. SNELSON: A. I expect that will  
2 become part of the dispatching procedure of the system  
3 control centre along the lines that were described by  
4 Mr. Barrie in Panel 2.

5 Q. You are predicting that the same  
6 parameters will be used. But what I don't understand  
7 is you have Hydro-owned facilities on one side and  
8 non-Hydro-owned facilities on this side. How are you  
9 going to decide whether it's the private side or the  
10 public side that should be turned down first?

Now from an overall economic dispatch point of view of an Ontario Hydro system and a NUG system, then you would want to get close to that. I would expect that the system control centre would in fact for non-utility generators be looking at some incremental payment to the non-utility generator for additional kilowatthours that were generated as the proxy for the incremental cost. And that would be part of the contract that would have to be negotiated with

1 the non-utility generator.

2 Q. In terms of maintaining the long-term  
3 stability of the NUG industry, would that be a factor  
4 in this decision-making process?

5 A. If the terms for the contract of the  
6 NUG have been worked out fairly, then the stability of  
7 the industry should not be threatened according to  
8 whether they are dispatched a lot or a little.

9 DR. CONNELL: Panel, while there is a  
10 pause may I just ask you. A few moments ago, Mr. Moran  
11 cited a figure of 5,000 megawatts. Is there a  
12 citation? Has that appeared earlier in your evidence?

13 MR. SNELSON: No, it has not. I suspect  
14 that Mr. Moran's comment about 5,000 megawatts relates  
15 to some discussion that occurred at the meeting with  
16 the NUG proponents on October the 18th.

17 DR. CONNELL: Will that be made available  
18 to us?

19 MR. SNELSON: It will when the  
20 information is fully prepared. It was a preliminary  
21 indication of some directions that things are moving at  
22 the moment. Some changes since I was giving my direct  
23 evidence on Panel 5 since the 3,000 megawatts, 3,100  
24 megawatts for non-utility generation was accepted by  
25 the Corporation. It relates to some adjustments to the

1 load forecast that are in process and will be  
2 incorporated in the plan re-balancing exercise that is  
3 underway.

4 DR. CONNELL: Thank you.

5 MR. MORAN: Q. You are referring to the  
6 re-integration process that Mr. Campbell has alluded to  
7 previously?

8 MR. SNELSON: A. Yes.

25 Q. If this period of surplus is

1       accompanied by the implementation of a long lead time  
2       option such as a nuclear plant, what kind of changes,  
3       if any, are we looking at, that we would see or expect  
4       to see in avoided costs?

5               A. I don't think it is likely that we  
6       would propose long lead time plant to be constructed at  
7       a time that was expected to exacerbate a surplus.  
8       Consequently, I wouldn't expect it to have a  
9       significant effect on extending a period of surplus or  
10      extending a period of low avoided cost.

11              Q. If the long lead time coincides with  
12      the surplus but when it comes on line the surplus is  
13      beginning to diminish, and I am only looking now at the  
14      time where the lead time is overlapping with the period  
15      of surplus, when you were answering yesterday on this  
16      point you indicated that avoided costs would largely be  
17      determined by fuel costs and ongoing maintenance costs.  
18      If accompanying that you also have the cost associated  
19      with this lead time implementation, would we expect  
20      avoided costs to drop in that kind of circumstance?

21              A. I would expect avoided cost for the  
22      years of the surplus themselves to be relatively low  
23      and avoided cost for the period when new generation was  
24      planned to be in-service to be higher. And that the  
25      leads time -- the costs that are used to calculate the

1       value of avoiding or deferring new generating capacity  
2       would include all the costs of developing that  
3       capacity.

4                   Q. In other words, all the construction  
5        costs and so on that are being incurred during the  
6        period of surplus, even though the plant isn't in  
7        service, would also be factored into avoided cost  
8        during that period?

9                   A. They become part of the avoided cost  
10      during the period when new generation is planned, when  
11      generation can be avoided.

12                  Q. I understand under the new guidelines  
13      that you will be requiring new proponents of NUGs to  
14      meet a heat rate of 6,600 btu's per kilowatthour. Can  
15      you confirm that?

16                  MR. VYROSTKO: A. That's correct.

17                  THE CHAIRMAN: That translates it at 9  
18      per cent; is that correct?

19                  MR. VYROSTKO: That's correct.

20                  MR. MORAN: Q. And that's the same thing  
21      when you say a 9 per cent component to adder, you are  
22      talking about 6,600 btu's?

23                  MR. VYROSTKO: A. That's right.

24                  Q. Could you indicate why you chose this  
25      limit as opposed to the 7,000 btu limit that is set out

1 in the Income Tax Act, Class 34 Rules?

2                   A. Basically we used the knowledge that  
3 we have acquired from the industry to try to recognize  
4 and reflect the industry's capability to meet what we  
5 would classify as a high-efficiency cogen project, and  
6 approximately 6,600 btu per kilowatthour reflects a  
7 good quality efficient cogenerator and so therefore we  
8 wanted to use that as a definition.

9                   Q. So your goal is to get good quality  
10 high-efficiency cogeneration in other words?

11                  A. That's correct.

12                  Q. Now I thought I understood you to say  
13 to Mr. Starkman yesterday that the dispatchable portion  
14 doesn't have to be within this limit; in other words,  
15 it could be less sufficient; is that true?

16                  A. Basically what I was saying yesterday  
17 was that each proponent would be expected to put  
18 forward a project that would qualify within our 9 per  
19 cent efficiency adder. And if they wanted to provide  
20 more megawatts than that project would allow, they  
21 could but it would have to be dispatchable.

22                  Q. As long as it was dispatchable though  
23 it wouldn't have to meet your 6,600 btu requirement?

24                  A. That's correct. The total project  
25 would then not qualify or meet the 9 per cent.

1                   Q. Could you indicate what effect we are  
2                   going to have on this goal for high-efficiency  
3                   cogeneration if every megawatt of high efficiency is  
4                   matched with a megawatt of low efficiency, albeit  
5                   dispatchable?

6                   A. I think at this time it is too early  
7                   to tell. We really don't know what response we will  
8                   get from proponents with these projects in terms of  
9                   dispatchability. And we are still uncertain as to  
10                   whether in fact proponents can put any dispatchable  
11                   project together that's economic and necessarily what  
12                   type of criteria they would be asking for in terms of  
13                   how we would then try to dispatch that to make the  
14                   projects economic. So I think it is just too early to  
15                   tell.

16                   What we are trying to do with these  
17                   guidelines is to provide some flexibility to the  
18                   industry to try to provide us with something that we  
19                   are looking for as well which is dispatch.

20                   Q. And that's largely because you  
21                   haven't yet figured out how you are going to actually  
22                   pay for dispatchable NUGs at this point? You haven't  
23                   figured out the parameters yet?

24                   A. Well, as Mr. Snelson said, there are  
25                   indications from an overall system perspective what

1        dispatch provides. I think the bigger uncertainty is  
2        whether a proponent could put a dispatchable project  
3        that meets that type of economics.

4                    Or the type of constraints that a  
5        proponent might be asking for when they come forward  
6        with dispatch because for instance if it is a natural  
7        gas-fired plant, they have to buy natural gas and  
8        obviously the gas company or the gas contract would  
9        somehow have some minimum procurement of gas. And the  
10       question is how would a proponent then try to reflect  
11       that need to cover off the cost for some basic  
12       procurement of gas to cover off dispatch? So some of  
13       those questions we just don't know at this time.

14       [10:55 a.m.]

15                   Q. As I read the guidelines it would  
16       appear that there are two ways to get dispatchable  
17       NUGs. One way would be to have a high-efficiency cogen  
18       plant and then side by side you have got basically a  
19       dispatchable straight CTU kind of plant; that's one  
20       way, right?

21                   A. I don't think that's what we were  
22       looking at in terms of the type, having two separate  
23       plants. I am not sure if that would be one of the ways  
24       that we are looking at this.

25                   Q. Would that not be one way to do it

1       though? You have your high-efficiency cogen operating,  
2       that machine is there, and then you have a dispatchable  
3       machine as well?

4                   A. Again, if a proponent can put an  
5       economic project together that would in fact have two  
6       different projects and therefore all the costs would be  
7       separately isolated so that there is an economic value  
8       placed on the one project and then he has got a  
9       separate project that is trying then to become an  
10      economic project as well, if that can happen that might  
11      be a possibility.

12                  But I think in most cases we are looking  
13      at dispatch as being an increment to the existing plant  
14      because of economies of scale and values of capital  
15      costs in there. So, I don't think it's isolated  
16      plants.

17                  Q. Yes, that's the other way. You could  
18      actually just have the one plant which is partly  
19      dispatchable and partly high-efficiency generation,  
20      right, cogeneration?

21                  A. That's correct.

22                  Q. But those two possibilities exist?

23                  A. They do exist.

24                  Q. With respect to the second  
25      possibility, the one where you have a high-efficiency

1        cogeneration plant which will also be producing  
2        dispatchable NUGs, isn't it fair to say that the  
3        hardware that's involved in that kind of a machine is  
4        going to be a lot more complicated and subsequently  
5        more expensive?

6                    A. I can't necessarily answer whether it  
7        would be a lot more complicated. I think there will be  
8        additional equipment there. There will be probably  
9        additional controls that will have to be placed on that  
10      so that it can be called up whenever it is necessary to  
11      be called up. But to necessarily categorize that as  
12      more complicated, I guess I can't answer that.

13                  Q. If we take an example of a plant  
14      where you are using steam to heat soup, for example,  
15      for whatever reason, and at the same time there is this  
16      dispatchable capability, there is going to have to be a  
17      balancing process available so that one operation  
18      doesn't suffer as a result of the other, right?

19                  A. That's correct. In the design you  
20      would be having again your reference project and then  
21      this incremental dispatch and the question is how you  
22      control that incremental dispatch.

23                  Q. So there are some technical problems  
24      that are additional to the normal high-efficiency  
25      cogeneration once you introduce dispatchability?

1                   A. There are additional pieces of  
2                   equipment that will have to be acquired, that's  
3                   correct.

4                   THE CHAIRMAN: I believe you said  
5                   yesterday you don't, at the moment, have any in-service  
6                   dispatchable NUGs; is that correct?

7                   MR. VYROSTKO: That's correct.

8                   THE CHAIRMAN: But I take it because of  
9                   this guideline that you expect that there is a  
10                   possibility that there will be some in the future; is  
11                   that correct?

12                   MR. VYROSTKO: The guideline in fact is  
13                   to try to encourage people to try to propose  
14                   dispatchability so that we have an understanding as to  
15                   what type projects we could get with that, that's  
16                   correct.

17                   THE CHAIRMAN: I am just not sure. Is  
18                   the dispatchable energy you may achieve as a result of  
19                   this, would that be in addition to the 3,100 or how  
20                   would it fit into that mosaic?

21                   MR. BROWN: It would be, if you remember,  
22                   the future NUGs plans are only forecasting  
23                   high-efficiency cogeneration, so it would just be the  
24                   high-efficiency component.

25                   Once a project is signed up I will then

1 include that in the plan at that time with the  
2 dispatchable component added on.

3 THE CHAIRMAN: Just to make sure, if you  
4 do get some of them then you will add it on to the  
5 3,100; is that right, and you will change your  
6 forecast?

7 MR. BROWN: The dispatchable component  
8 would be added on to the 3,100, that's correct.

9 MR. MORAN: Q. Do you have any analysis  
10 at this point that will indicate that the NUG industry  
11 in fact is going to be able to meet this new limit and  
12 still have economic plants, or are you just waiting to  
13 go see what happens?

14 MR. VYROSTKO: A. With respect to the 9  
15 per cent?

16 Q. Yes, the new guidelines.

17 A. Well, first of all, we believe that  
18 we can get projects that will qualify for that. A  
19 number of our existing projects have qualified. So we  
20 don't anticipate having major problems getting projects  
21 qualifying for that.

22 Q. What is the basis for your belief?

23 A. Again, based on projects that we have  
24 seen in the past and the efficiencies that they have  
25 been able to achieve.

1                   Q. Could you perhaps indicate the kinds  
2                   of range of efficiencies that you have seen with  
3                   projects so far?

4                   A. We have seen projects achieve  
5                   efficiencies down to the order of 6,000 btu per  
6                   kilowatthour.

7                   Q. And up to what?

8                   A. Well, if go to a major supply NUG you  
9                   are looking at something higher than 8,000.

10                  Q. And in that range what percentage has  
11                  been within your new guideline limit?

12                  A. I don't know offhand what the  
13                  percentage would be.

14                  Q. Is that something that you could  
15                  provide us later on?

16                  A. In some cases we don't know yet  
17                  because of the stage we are at with the project. We  
18                  can't necessarily determine yet what that is in some  
19                  cases.

20                  Q. For projects where you do know  
21                  though, is that something you can provide later on?  
22                  Just a simple breakdown that would show what kind of  
23                  percentage of projects that are underway now, well  
24                  committed, what percentage of those are meeting the  
25                  heat rate in the new guideline?

1                   A. I think I can do that.

2                   MR. MORAN: Mr. Chairman, perhaps we  
3                   could mark that as an undertaking.

4                   THE CHAIRMAN: No.?

5                   THE REGISTRAR: Undertaking 322.22.

6                   ---UNDERTAKING NO. 322.22: Ontario Hydro undertakes to  
7                   provide the percentage of projects  
8                   underway now that meet the heat rate in  
                  the new guideline.

9                   MR. MORAN: Q. What kind of feedback --  
10                  I know that the announcement was October 18th, can you  
11                  give us an idea of what kind of feedback you have  
12                  gotten from the industry at this point?

13                  MR. VYROSTKO: A. I guess I personally  
14                  haven't had any feedback.

15                  Subsequent to the meeting I had some  
16                  comments at the meeting with respect to how the  
17                  proponents saw the guidelines. Some saw it as positive  
18                  and some saw it as being restrictive with respect to  
19                  the different types of projects that could be put  
20                  forward by themselves.

21                  So, I think we really had the range of  
22                  comments both from positive in terms of direction that  
23                  people saw as being important, and for other people it  
24                  was restrictive.

25                  Q. One of the restrictions of course is

1       that straight major supply NUGs are basically out of  
2       the running at this point.

3                   A. Or in some cases the low-efficiency  
4       cogeneration projects.

5                   Q. And low efficiency, right.

6                   Barring of course the possibility that  
7       somebody can bring forward a dual project that has a  
8       major supply NUG that is dispatchable on the one hand  
9       and a high-efficiency cogen on the other if it's  
10      economic to do that, right?

11                  A. Again, if they can meet the  
12      guidelines then they would be acceptable, yes.

13                  Q. Do you have any analysis available  
14      that has been done to compare advantages and  
15      disadvantages of major supply NUGs against the thermal  
16      generation technologies for which Hydro is seeking  
17      approval, their conventional steam-cycle coal  
18      generators and the CTUs that are listed in the  
19      approvals chapter?

20                  MR. SNELSON: A. We expect there to be a  
21      discussion on Panel 8 of the environmental and other  
22      characteristics of combustion turbine and  
23      combined-cycle generation, and those are the  
24      technologies which would be used by major supply NUGs.  
25      So, in that sense, it will be addressed in Panel 8.

1                   Q. Is there any consideration given to  
2 the possibility of having those particular plants in  
3 the form of NUGs as opposed to Hydro-owned and operated  
4 facilities?

5                   A. That's something that we are  
6 certainly prepared to consider, is what we have  
7 indicated.

8                   Q. And that's notwithstanding the fact  
9 that you are currently seeking approvals for those  
10 kinds of plants, right?

11                  A. Currently, and when the approvals  
12 were drawn up, that was not our expectation that the  
13 NUGs would be interested in providing such facilities.

14                  Q. If the NUG industry is interested,  
15 then you would be prepared to consider that  
16 possibility?

17                  A. I think it is something that has to  
18 be considered when we determine that there is a need  
19 for such facilities.

20                  Q. Just while we are on this point how  
21 do transmission costs get allocated to a Hydro-owned  
22 thermal generation plant?

23                  A. In planning analyses we try to take  
24 into account impacts on the transmission system. In  
25 particular, when studies are being done on site

1 selection for generating plants, then the costs of the  
2 transmission system are very central to those studies.  
3 So, in site selection processes transmission costs can  
4 often be the determining factor as to the general area  
5 in which a site is being sought.

6 Q. And the rules that Hydro follows for  
7 its own plants, are they the same rules that would be  
8 applied to any NUG?

9 A. Our intent is to mirror the same  
10 process. In practice, because we are not selecting the  
11 sites for the non-utility generators and because we are  
12 dealing through a contract and through a negotiation  
13 process, then the practice may be different, but the  
14 intent is the same.

15 Q. I want to move at this point to the  
16 table that's being set out in the new guidelines,  
17 Exhibit 346. Again, it's on the second page after the  
18 cover page. The table is entitled, "Planned and  
19 Expected NUG Capacity Megawatts", and it scans a time  
20 from 1991 to the year 2000.

21 On the first line we see the heading  
22 "1990 NUG Plan" and on the second line we see the  
23 "Accelerated Plan". I assume those two lines simply  
24 demonstrate the change that has occurred between the  
25 1990 NUG plan and the evidence you are giving here

1 today, correct?

2 MR. BROWN: A. The accelerated plan is  
3 our 3,100 preliminary estimate on a year-by-year basis.

4 Q. So those two, the first two lines in  
5 that table basically demonstrate those changes?

6 A. Yes.

7 Q. And when we look at the third line,  
8 it's entitled "In-service Plus Committed", and this  
9 goes up to 1993, and the fourth line is "In-service  
10 plus Committed plus Likely". I assume that those two  
11 lines -- the fourth line is basically additive to the  
12 third line?

13 A. No, these are all separate lines.

14 The in-service, likely and committed line  
15 includes the line above, the in-service plus committed.

16 Q. Right. And the figures as they run  
17 across of the table are cumulative, right?

18 A. Yes, they are.

19 Q. Do you have a breakdown of the  
20 numbers on the third line that would show how many of  
21 those projects meet your guidelines currently  
22 concerning the heat rate?

23 THE CHAIRMAN: That's the same question  
24 that you just asked a moment ago, isn't it, the same  
25 undertaking? Isn't that what they are going to get for

1                   you?

2                   MR. MORAN: It may be. I just want to  
3                   make sure that that is the case, or if there are  
4                   additional questions.

5                   I think the undertaking, Mr. Chairman,  
6                   referred to projects that are behind them that they  
7                   know a lot about, and these go to 1993, still to be put  
8                   into service.

9                   THE CHAIRMAN: Maybe I misunderstood. I  
10                  thought it was in-service and committed that they were  
11                  asked for.

12                  MR. MORAN: Right. But you will also  
13                  notice on the third line that those figures run up to  
14                  1993, and we are not yet at 1993, so I want to ask  
15                  about those figures that have still to come on stream.

16                  MR. VYROSTKO: I guess I was saying that  
17                  typically with committed projects we would have an idea  
18                  from the proponent as to what the heat rate would be.  
19                  So this undertaking that I was looking at would be  
20                  looking at in-service and committed.

21                  THE CHAIRMAN: Let me understand. In the  
22                  third line, in-service plus committed, would those be  
23                  all now committed as of the date of the table but  
24                  aren't expected to come on-stream until 1993?

25                  MR. VYROSTKO: That's correct.

4 MR. VYROSTKO: That is exactly right.  
5 The third line is those that are in-service and  
6 committed and they are under construction, in essence,  
7 now.

8 MR. MORAN: Q. The figure that we see  
9 under 1991 I assume is a figure that represents sites  
10 that are presently in-service, they are built, right?

11 MR. BROWN: A. There may be some that  
12 are still to be built by year end.

13 Q. By year end, okay. And then the  
14 differences that are represented by the figures under  
15 1992 and 1993 are the ones that are still to be built,  
16 right?

17 MR. VYROSTKO: A. That's correct.

18 Q. Perhaps in the undertaking that you  
19 gave me you could just separate the ones still to be  
20 built and just indicate what you expect to be the heat  
21 rate for those projects so that we have a separation.

1                   Q. I am not looking for the names of any  
2 projects; I want just want the numbers, that all.

3                   A. Again, if there is only one project  
4 though that would be in that category, then you would  
5 typically know which one it is.

6                   Q. I think we can agree that just having  
7 a number next to project one, as opposed to the name, I  
8 don't think will pose any confidentiality problems.

9                   A. Okay, if I can do that, we will do  
10 that.

11                  MR. MORAN: Mr. Chairman, perhaps Mrs.  
12 Formusa can help us on this point.

13                  MRS. FORMUSA: I think it is quite clear.  
14 I understand that the confidentiality issue has been  
15 dealt with and we will answer the undertaking without  
16 breaching any confidentialities.

17                  MR. MORAN: The only clarification I  
18 would see, Mr. Chairman --

19                  THE CHAIRMAN: Let's see what happens.  
20 We will cross that have bridge when we come to it.

21                  MR. MORAN: Yes. I am just looking for  
22 numbers of plants that meet the heat rate, that's all.  
23 I am not asking for confidential information.

24                  THE CHAIRMAN: There is some evidence  
25 somewhere that the present projects, uncommitted ones,

1 all meet the high efficiency. So, it is just a matter  
2 of -- is it 6,000?

3 MR. VYROSTKO: No, all the current  
4 projects don't necessarily meet the high efficiency  
5 one.

6 THE CHAIRMAN: The 6,600, but the old  
7 guidelines.

8 MR. VYROSTKO: Well, the old guideline  
9 was again the sliding scale which actually went all the  
10 way up to 10,000, so they would meet that, but that's  
11 not the same as this one.

12 There are some that meet the new  
13 guidelines and under the old standards, and I think  
14 that's we would try to determine, the percentage of  
15 those that would do that.

16 THE CHAIRMAN: I am not sure how this is  
17 all going to help us make the decisions that we are  
18 supposed to be making, but I guess if you want this  
19 information and they are prepared to give it, I am not  
20 going to object to it.

21 MR. MORAN: Thank you, Mr. Chairman.

22 Q. The fourth line adds in projects that  
23 are classified as likely. The projects that are  
24 included here as likely, are they changed as a result  
25 of the new guidelines, or are you still proceeding with

1        those to whatever end result you will get on them?

2                    MR. VYROSTKO: A. I think the ones that  
3        are shown as likely are the ones that we have talked  
4        about that have price offers already formally accepted  
5        in most cases by ourselves and the proponent, so they  
6        are proceeding as originally negotiated.

7                    Q. Perhaps in the undertaking you could  
8        put a third column that would indicate how many of  
9        those that are likely also meet the new guidelines, the  
10       6,600. Would you be able to do that?

11                  A. I may not know some of that  
12        information on some of those. For those that I would  
13        know, yes, I can include that.

14                  Q. Okay. Some of the ones you might  
15        know, that would be because they are too far down the  
16        line at this point?

17                  A. They are not far enough down the  
18        line.

19                  Q. Not far enough, sorry.

20                  Is it true that the new guidelines don't  
21        apply to any of the 2,188 megawatts that we seen in  
22        line 4? They may meet the guidelines but they don't  
23        have to; is that true?

24                  A. I think the guidelines are intended  
25        for projects that we are now proceeding in the future

1 with.

2 Q. So you are talking past the 2,188?

3 A. That's correct.

4 Q. And if we look at the forecast on the  
5 accelerated plan we see that we are expecting 3,107  
6 megawatts by the year 2000, and the total on the  
7 committed the -- on the in-service plus committed plus  
8 likely line is 2,188 megawatts, so in terms of the  
9 forecast at least we are talking about 1,000 megawatts  
10 give or take a few that will have to meet the new  
11 guidelines, right?

12 A. There are, in terms of these new  
13 guidelines and the fact that there were a number of  
14 proposals that we had been working on for two to three  
15 years, there are a few proposals that we are still  
16 treating as part of the old guideline that we are  
17 completing negotiations with.

18 [11:21 a.m.]

19 Q. Right.

20 A. So they would be in addition to the  
21 2,188 if they were in fact to materialize. And then  
22 after that all new projects would have to follow  
23 guidelines.

24 Q. If we look at the final number on  
25 line 2 and the final number on line 4, the difference

1                   there is in the order of 1,000 megawatts.

2                   A. That's correct.

3                   Q. And in terms of the forecast at least  
4                   it's those 1,000 megawatts that will have to meet the  
5                   new guidelines that we are talking about?

6                   THE CHAIRMAN: No, that's not what he  
7                   said. He said there may be some that aren't in the  
8                   likely category yet which they would give, they would  
9                   grandfather for the purpose of this.

10                  MR. MORAN: All right.

11                  Q. Do you have an idea at this point  
12                  about how many megawatts might be grandfathered in  
13                  beyond the 2,188?

14                  THE CHAIRMAN: I'm not quite sure where  
15                  all this is getting us, Mr. Moran. What is this all  
16                  about? Why do you need to know this kind of detail?

17                  MR. MORAN: Well, Mr. Chairman, the NUG  
18                  program is an important component of the overall plan  
19                  particularly from the government's point of view and we  
20                  need to, I believe, get a full understanding of exactly  
21                  the role that the NUG program can play.

22                  THE CHAIRMAN: I think the program is  
23                  fully and well described. What the actual situation on  
24                  the ground at the moment is as to whether or not a  
25                  particular project is treated under the old rules or

1 the new roles, what difference does that make to you?

2 MR. MORAN: I am not considerably  
3 concerned about whether a project is treated under the  
4 now rules or the old rules. I am simply trying to get  
5 an idea of what number of megawatts are going to be  
6 treated under the new rules so that we can see the  
7 impact, have some idea perhaps of the impact of the new  
8 rules, at least by the year 2000, given the forecast of  
9 3,100.

10 I am not trying to determine whether  
11 there are good or bad points to staying under the old  
12 or new rules. I just simply want to get a clear idea  
13 of what the new rules actually do apply to at this  
14 point in terms of the forecast.

15 I thought originally it might be 1,000  
16 megawatts but there will some apparently that will be  
17 grandfathered in and I would just like to know what  
18 that number is so we get the full picture.

19 MR. VYROSTKO: It's approximately 800  
20 megawatts.

21 MR. MORAN: Q. So, if all of those are  
22 going to be put into the category of likely and perhaps  
23 even committed, then ultimately the end result is we  
24 are looking at about 200 megawatts that will have to  
25 meet the new guidelines by the year 2000?

1 MR. VYROSTKO: A. Additional megawatts.

2 Q. 200 additional megawatts, all right.

3 Now as I read your guidelines regarding  
4 dispatchability, my understanding is that those are  
5 voluntarily, they are not positive requirements. Is  
6 that correct?

7 A. That's correct.

8 Q. If nobody takes you up on this offer,  
9 what are you going to do about the requirement for  
10 dispatchability that you have indicated is the reason  
11 for the new guidelines?

12 A. I guess first of all I am not sure if  
13 the reason for the new guidelines is trying to get more  
14 dispatch. I think the reason for the guidelines is the  
15 number of issues with respect to system need, to  
16 transmission limitations, to a number of different  
17 factors.

18 Q. Clearly one reason is to get  
19 high-efficiency cogeneration?

20 A. That's correct.

21 Q. And I am talking in addition to that.

22 A. And what we are saying is that we  
23 would be prepared to consider dispatch if the proponent  
24 could put a dispatch project forward to us that in fact  
25 would meet all the requirements that we have, both

1       technical and economic.

2                   And so what we are trying to do is  
3       encourage that side of the business now to go beyond  
4       just looking at projects, base load projects, to see  
5       whether in fact they can bring forward dispatch  
6       projects. So, that's an encouragement we are looking  
7       for. But the primary purpose of the guidelines is now  
8       to move towards high-efficiency cogen.

9                   Q. I am going to move away from the 1991  
10      announcement now. I see it is almost 11:30, Mr.  
11      Chairman. Is this an appropriate time for a break?

12                  THE CHAIRMAN: We will take a break now  
13      for fifteen minutes.

14                  THE REGISTRAR: This hearing will recess  
15      for 15 minutes.

16      ---Recess at 11:24 a.m.

17      ---On resuming at 12:44 a.m.

18                  THE REGISTRAR: Please come to order.  
19      This hearing is again in session. Be seated, please.

20                  THE CHAIRMAN: Mr. Moran.

21                  MR. MORAN: Thank you.

22                  Q. As I understand the new guidelines  
23      you were making available the possibility of  
24      dispatchable megawatts to all projects that are already  
25      in existence as well as ones that are going to be

1 coming on stream; is that correct? Maybe I can draw  
2 your attention to page 4 after the cover page of  
3 Exhibit 346 and it's item B(2)

4 MR. VYROSTKO: A. Yes, we have made the  
5 offer to existing proponents to consider giving us  
6 dispatch.

7 Q. And as I read B(2), anybody who has  
8 an existing contract can match the megawatts that are  
9 presently selling to Ontario Hydro with an equal number  
10 of dispatchable megawatts?

11 A. If they wanted to add megawatts in  
12 their existing project, they could add megawatts if  
13 they provided an equal amount of dispatch as one  
14 alternative.

15 The other alternative is to just give us  
16 dispatch if they so desire it as well.

17 Q. Right. So there are two things that  
18 can happen then. The first thing would be that they  
19 can simply match their current megawatt figure with the  
20 same number of dispatchable megawatts, right, that's  
21 one thing? That's one alternative?

22 Let's say you have a high-efficiency  
23 cogen plant that is producing 30 megawatts, under the  
24 new guidelines they could offer to you an additional 30  
25 megawatts of dispatchable, right?

1 MR. BROWN: A. Provided all 60 is fully  
2 dispatchable.

3 Q. I see. That was not completely  
4 clear, at least to me, from this, so basically what you  
5 are saying is that for current operations if somebody  
6 wanted to add on dispatchable megawatts they would have  
7 to convert an equal number of their current megawatts  
8 into dispatchable megawatts?

9 A. If they have that capability, yes.

10 Q. Now it seems when you read that  
11 subsection as well that it is possible to add on new  
12 megawatts and then match the new megawatts with  
13 dispatchable. How does that fit into what you have  
14 just described? Would that mean you would still have  
15 to convert everything you presently have into  
16 dispatchable as well as adding on dispatchable.

17 A. I think this is written because there  
18 are probably some existing facilities that have  
19 dispatch capabilities already which are not being used,  
20 so this would allow them to utilize that component of  
21 their existing operation and allow them to increase it.

22 Q. So the net result is for every  
23 dispatchable megawatt that they want to offer you in  
24 addition, they would have to convert a current megawatt  
25 into a dispatchable megawatt. That is the net result;

1 right?

2 A. That is what is stated in this  
3 section, yes.

4 Q. For new contracts, and I guess we are  
5 talking I guess about the 200 megawatts that we might  
6 have by the year 2000 that do have to comply with the  
7 guidelines, they don't have to give you total  
8 dispatchable megawatts. They can have high-efficiency  
9 cogen and then they can match that with additional  
10 dispatchable megawatts; right? And that's the general  
11 intent of the guidelines that apply to new contracts?

12 MR. VYROSTKO: A. They can provide  
13 additional megawatts that match to the reference  
14 project which is a project that meets the guidelines.

15 Q. And the reference project doesn't  
16 have to be dispatchable, does it?

17 A. No, the reference project just has to  
18 meet the 9 per cent or the 6,600 btu per kilowatthour.

19 Q. Can you explain why you are treating  
20 the new projects differently from existing projects,  
21 given that you have just indicated that for existing  
22 projects they would have to convert current megawatts  
23 to match new dispatchable megawatts?

24 A. I think the first thing we are trying  
25 to do is to ensure that the projects that we get meet

1       high-efficiency cogen. If some of the existing  
2       customers or proponents aren't high-efficiency cogen,  
3       then we want to be very careful that what we are asking  
4       them to provide us with in addition is something that  
5       is good for the system and good for the province in  
6       total.

7                   And so what we are trying to do is make  
8       sure that what we are getting with existing projects  
9       is, if we are looking at dispatch, clearly it is  
10      dispatch for us. And so what we don't want to do is  
11      necessarily increase non-efficient projects and  
12      increase their size and at the same time get dispatch.  
13      So to some extent we are trying to in fact focus on the  
14      high-efficiency and make that the preference.

15                   THE CHAIRMAN: Perhaps for clarification.  
16       If an existing NUG meets the high efficiency of the  
17       reference project, would it be entitled to add  
18       dispatchable NUGs to that project?

19                   MR. VYROSTKO: We would clearly consider  
20       that, yes.

21                   THE CHAIRMAN: So really there is no  
22       difference between the treatment of new projects and  
23       existing projects in that respect?

24                   MR. VYROSTKO: If they are high  
25       efficiency, that's correct, it would be the same.

1                   MR. MORAN: Q. If I understand your last  
2 answer to the Chairman then, that would be an exception  
3 to the guideline. You would be making an exception for  
4 existing high-efficiency cogenerators, right, by not  
5 requiring them to convert to dispatchable?

6                   I see a bit of a conflict in what you  
7 have just said. We have existing contracts out there,  
8 some of them are high efficiency and some of them are  
9 not. You have indicated that if the low-efficiency  
10 types want to offer dispatchable megawatts, you would  
11 require them to convert some of their present megawatts  
12 into dispatchable also.

13                  But as I understood your answer to the  
14 Chairman right now, you have also indicated that if it  
15 was a high-efficiency plant in existence right now you  
16 won't require them to convert to dispatchable megawatt  
17 for megawatt?

18                  MR. VYROSTKO: A. I don't think we would  
19 necessarily require that. Again as I said, I think if  
20 we are dealing with a high-efficiency cogen project,  
21 whether it is a new projects or an old project, we  
22 would try to treat that the same, and that is to  
23 recognize a high-efficiency cogen project and if in  
24 fact it was of benefit to ourselves and to the  
25 proponent, they can in fact go with dispatch. Just

1 adding --

2 Q. Just adding it on?

3 A. Adding it on.

4 Q. Without converting it?

5 A. Without converting it.

6 But if you have an existing project which  
7 doesn't meet that, then it may be slightly different.

8 Q. So, when we look at B(2) then, I  
9 guess what you are saying is that B(2) is not going to  
10 apply to existing high-efficiency cogeneration?

11 A. I wouldn't think so.

12 Q. Would you use the same dividing line  
13 of 6,600 btu's to distinguish high-efficiency existing  
14 cogenerators from low efficiency?

15 A. I think that that would be a category  
16 that would apply to both existing and new.

17 Q. Mr. Brown, given that there is the  
18 potential for the 3,100 forecasted megawatts which we  
19 see in the upcoming plan to yield a potential at least  
20 of 3,100 megawatts of dispatchable megawatts, is there  
21 any way that you are planning to take that into account  
22 in the 1991 NUG plan or is it too early to try and do  
23 that?

24 MR. BROWN: A. First of all I don't  
25 think you are going to get 3,100 of dispatch. We are

1       looking at high-efficiency cogeneration which is only a  
2       part of the 3,100. Right now I haven't seen any  
3       evidence that projects will be able to put forward or  
4       are interested in dispatchable. And when I start  
5       seeing that, I will start looking at it in the forecast  
6       as they are committed.

7                   Q. The next area I want to move to now  
8       relates to rate structures for different kinds of --

9                   THE CHAIRMAN: Just before we leave it  
10      and we are on that page of the guidelines. Following  
11      the one and two, there is a sentence that says:

12                   Ontario Hydro reserves the right to  
13                   negotiate, limit or decline offerings of  
14                   dispatchable megawatts.

15                   What is your understanding of the  
16      implications of that sentence, particularly with  
17      respect to -- given there is a situation where someone  
18      otherwise meets the guidelines, would you still decline  
19      the offering in certain circumstances?

20                   MR. VYROSTKO: Yes, I think what we had  
21      as a potential issue here is that the guideline would  
22      become the base case concept for the proponent and then  
23      we would all of a sudden maybe end up having a lot more  
24      dispatchable contracts without the focus on high  
25      efficiency, when in fact we want the first, we want to

1 focus on high efficiency and only add dispatch if we  
2 can get it.

3 So our concern is we may end up getting a  
4 lot of projects that all they can give us is dispatch  
5 and we want to ensure that high-efficiency cogen is a  
6 first concept.

7 And the second issue that we don't know  
8 yet is what type of qualifications, constraints, or  
9 even economics would we be presented with respect to  
10 dispatch, so we would like to see the types of offers  
11 we get first before we make any commitment to how many  
12 or how far we go with those.

13 THE CHAIRMAN: Thank you.

14 MR. MORAN: Q. Just a last question on  
15 this point before I do move on. I assume that given  
16 that you have indicated there would be an exception  
17 made for high-efficiency cogen that's presently in  
18 existence, that you will be taking some steps to  
19 communicate that exception to the industry so that they  
20 will understand more fully these guidelines?

21 MR. VYROSTKO: A. I think that again  
22 these guidelines are draft guidelines. We presented  
23 them to the industry on October 18th. Clearly what we  
24 are looking for is feedback from them in terms of how  
25 they view those and whether in fact some of those are

1 practical. And if we got information from the industry  
2 that the way we set them out are just impossible, then  
3 clearly, you know, we have to look at them.

4 Q. I am going to move on now. You will  
5 agree that there are two ways in theory at least to get  
6 cogeneration. One will be to deal directly with the  
7 steam host and the other one would be to go through a  
8 third party developer, is that correct, who would be an  
9 intermediary perhaps between the steam host and Ontario  
10 Hydro?

11 A. That's correct.

12 Q. If we look at the example of  
13 high-efficiency load displacement NUGs, as I understand  
14 your evidence originally, your approach in cases like  
15 that is based upon sharing benefits; is that correct?

16 A. Yes, it is trying to give the same  
17 value to that project as we would to any other project  
18 with respect to our avoided costs.

19 Q. Right. But by sharing benefits,  
20 isn't it true that you are really talking about  
21 purchase rates that perhaps are less than avoided cost?  
22 I'm only talking about the load displacement  
23 high-efficiency cogeneration at this point.

24 A. A load displacement generator would  
25 have a value. That project would have a value to us

1 that is reflected by our avoided cost. And we would be  
2 prepared to give the full avoided cost to that project.

3                   But in calculating what that avoided cost  
4 of the value that we give to the project, we deduct the  
5 revenues that we would not have as a result of that  
6 proponent generating themselves. And so whatever that  
7 difference is, we would be prepared to give that to the  
8 generator so that he does get the same value as any  
9 other generator for the project.

10                  Q. Would this be an application of the  
11 no-losers test?

12                  MR. SNELSON: A. The no-losers test  
13 applies to demand management.

14                  Q. Would this be a similar kind of thing  
15 to what we saw being described in the demand management  
16 panel?

17                  A. We consider that this is the purchase  
18 of generation and that the lost revenue from a load  
19 displacement non-utility generator is part of the cost  
20 of buying that generation.

21 [12:00 p.m.]

22                  Q. Is your answer yes or no as to  
23 whether it's an example of the application of a  
24 no-losers test?

25                  A. The no-losers test applies to demand

1 management, it doesn't apply to non-utility generation.

2 It's not --

3 Q. The reason I ask that, I am struck by  
4 the language in terms of sharing benefits, it was the  
5 same kind of language we heard with reference to the  
6 no-losers test in the demand management context. I am  
7 just wondering if it's the same kind of approach?

8 A. The concept of the no-losers test  
9 applies to demand management, it doesn't apply to  
10 non-utility generation the way we use it.

11 Q. Now, my understanding is that the  
12 third party developer, to use the other route, he would  
13 be treated as a purchase NUG; is that correct? That's  
14 how you would deal with that kind of a proponent?

15 MR. VYROSTKO: A. That's correct.

16 Q. Who would be able to negotiate for up  
17 to avoided cost plus whatever preference adder that  
18 might apply to the project, right?

19 A. Well, the preference adder is part of  
20 the avoided cost, so you would be able to then get a  
21 project that reflects the value of that project.

22 Q. Okay. Would you agree that we have  
23 two kinds of steam hosts at least in theory, one that  
24 would be willing and able to do a cogeneration project  
25 itself because it has the expertise and time and

1 capital, and the other is one that would prefer perhaps  
2 to rely on the expertise of a third party because they  
3 don't have the expertise themselves? Would you agree  
4 with that broad categorization of steam hosts?

5 A. There are those types of  
6 opportunities and alternatives, yes.

7 Q. The question I have is, how do you go  
8 about ensuring given that you have one kind of approach  
9 with high-efficiency cogeneration load displacement  
10 types of NUGs and another approach when it's involving  
11 a third party developer being treated as a straight  
12 purchase NUG. How do you ensure that those two  
13 different approaches in fact have a neutral impact on a  
14 decision by a steam host to take one route or the  
15 other?

16 A. I think the way we do that is we  
17 treat both of them equally with regard to how we value  
18 the project on our avoided costs, and therefore, we are  
19 prepared to pay the full avoided cost for either  
20 project.

21 Q. Given that you take into account lost  
22 revenue under one scenario and not the other, how do  
23 you ensure that this has a neutral impact on a decision  
24 by a steam host to go by way of a third party as  
25 opposed to dealing directly with Hydro on it's own

1 project?

13 Q. All right. I am going to move to  
14 another area now, and basically I would like to talk  
15 about Hydro's activities that relate to preferred  
16 options.

17 I assume that even with the  
18 implementation of the new guidelines that we see in  
19 Exhibit 346, that we still have basically the same list  
20 of preferred options that you first described in your  
21 direct evidence.

22 MR. SNELSON: A. Yes, that is correct.  
23 The only modification is to the sliding scale  
24 efficiency that we recognize.

25 Q. Right. You have now given specific

1 reference to something that will be more efficient than  
2 6,600 btu's per kilowatthour?

3 A. That's correct.

4 Q. With respect to those preferred  
5 options, the high-efficiency cogeneration and the  
6 renewable resources cogeneration, would you agree  
7 that -- I will deal first with the high-efficiency  
8 cogeneration. Would you agree that if you have an  
9 integrated plant design from scratch, that that is a  
10 more efficient way to go about obtaining  
11 high-efficiency cogeneration than compared to  
12 retrofitting a plant to do the same thing?

13 MR. BROWN: A. Could you redefine that?  
14 I'm not too sure of the differences there.

15 Q. All right. Would you agree that  
16 there are two ways to get high-efficiency cogeneration,  
17 one is to build it into a new plant as you are building  
18 it from the ground up, and the other one is to take an  
19 old plant and to retrofit it to do the same thing?  
20 Would you agree that that's two ways of achieving  
21 efficiency cogeneration for a particular kind of plant?

22 A. Yes.

23 Q. Would you agree that between those  
24 two alternatives, that from an engineering point of  
25 view it makes more sense to do it as part of the

1       initial plant as opposed to going in and trying to  
2       retrofit?

3                   A. I think it obviously would be easier  
4       to do it from an original -- if you are designing a  
5       plant that's going to use steam and you have  
6       cogeneration in mind, then that scheme is better than  
7       coming back 20 years later and trying to fit it into a  
8       building that wasn't designed for cogeneration.

9                   Q. In fact, it might be cheaper to do it  
10      from scratch as opposed to retrofitting, right?

11                  A. Not necessarily.

12                  Q. In terms of education programs, do  
13      you have any programs -- we heard programs described by  
14      the Demand Management Panel. I was wondering if you  
15      have some of similar kinds of programs to get to  
16      architects and plant designers and engineers and those  
17      kind of people, so that they have this kind of idea in  
18      their mind before they start designing new plants, do  
19      you have any programs along those lines?

20                  A. Our programs are aimed at all people  
21      in the industry, not just those that have existing  
22      steam use.

23                  We have given presentations to, say, the  
24      Consultant Engineers of Ontario who are in the business  
25      of designing these things.

1                   Q. Do you have any programs that are  
2       aimed at influencing decision-makers to include  
3       high-efficiency cogeneration as part of a new plant as  
4       opposed to waiting later on to do it by way of a  
5       retrofit?

6                   A. All our programs are applicable to  
7       those people, and we have many inquiries from people  
8       designing buildings to incorporate those facilities.

9                   Q. Beyond inquiries that come from  
10      people, do you have anything formal on your side that  
11      goes after in a proactive way at least to influence  
12      those decision-makers so that --

13                  A. Our communication is broad based. We  
14      have many brochures that tell of our activities and  
15      services that are provided by Ontario Hydro. Those are  
16      not just limited to people who have existing  
17      facilities; it goes to the whole industry, including  
18      architects and consulting engineers who would be  
19      designing buildings.

20                  Q. When you say the whole industry, what  
21      do you mean by that?

22                  A. To us the industry involves all  
23      stakeholders, the person developing it, the fuel  
24      source, the manufacturers, the consultants that design  
25      the projects, the engineers.

1                   Q. My question I guess is that in  
2                   addition to the broad approach as you have described  
3                   it, do you have any programs that are specifically  
4                   aimed at influencing the decision-makers directly, the  
5                   plant engineers, the design engineers, the architects,  
6                   do you have anything that is specifically aimed at  
7                   them?

8                   A. I don't know that they are the  
9                   decision-maker. They are the designer. The  
10                  decision-maker is the proponent that comes to us.

11                  Our activities are focused on everybody.  
12                  We don't focus on any one particular part of the  
13                  industry.

14                  Q. Do you have any specific programs  
15                  that are aimed specifically at people who want to build  
16                  plants in order to show them the advantages of  
17                  including cogeneration as part of the overall plant  
18                  design? I guess what I am talking about, do you have a  
19                  program that's capable of taking advantage of  
20                  opportunity when it makes sense to do that?

21                  A. My response is the same. Our  
22                  communications are directed at everybody in the  
23                  business, those that may not even have projects on  
24                  their plate who may in the future build those projects.

25                  MR. VYROSTKO: A. Could I maybe add to

1       Mr. Brown's comments?

2               Many of the new decision-makers that are  
3       looking at projects would be dealing with regional  
4       representatives, Hydro's regional representatives, when  
5       they in fact are looking at the opportunity and we work  
6       with our regional representatives with regard to  
7       identifying cogen opportunities, giving them all of the  
8       information that we have with respect to information,  
9       so that they become then the person that in fact would  
10      be helping people put those projects forward.

11              So, in many cases our regional  
12       representatives are dealing with the types of people  
13       that you are talking about.

14              Q. When particular projects comes up for  
15       discussion with the regional representatives, is it an  
16       automatic part of the regional representative's  
17       reaction to those meetings to include discussions of  
18       cogeneration possibilities?

19              A. If it was the type of process or the  
20       type of industry that would be indicating potential  
21       opportunities for cogeneration, then they would be  
22       talking with them.

23              Q. And is this a process that's  
24       triggered by an inquiry about cogen, or is this  
25       something that's proactively by the regional

1                   representatives?

2                   A. Both. If there is an inquiry that  
3                   comes in, they have their entire menu of programs that  
4                   Ontario Hydro has, and they would then go through those  
5                   menus that apply to that individual project and  
6                   identify those.

7                   In some cases we have our representatives  
8                   actually visiting customers to help them look at their  
9                   overall energy usage, and if they saw an opportunity  
10                   for cogeneration as a result of waste heat or whatever,  
11                   they would at that time also be recognizing and  
12                   identifying that to the customer. So it's proactive  
13                   and reactive.

14                   Q. Are you able to say that for every  
15                   proposed plant that comes to the attention of the  
16                   regional representatives, that that plant will be  
17                   assessed for this kind of opportunity?

18                   A. No, I can't say that in every case  
19                   that would happen. I couldn't say that.

20                   Q. I want to move now to the topic of  
21                   competitive bidding, which I believe you referred to as  
22                   competitive solicitation in the new guidelines.

23                   You have made some reference to the fact  
24                   that you believe the industry, the NUG industry is  
25                   maturing. I am just wondering if there are other

1 factors -- first of all, is that a factor that would  
2 indicate to you perhaps it might be appropriate to  
3 consider competitive bidding, or are there additional  
4 factors or other factors separate from that?

5                   A. I think there is a number of factors  
6 that we would want to consider before moving towards  
7 competitive solicitation or competitive bidding, either  
8 one. One is that there is an industry that that in  
9 fact is capable of putting projects together and, in  
10 essence, therefore, competing with themselves fairly on  
11 putting projects together.

12                   (2), that there would be a need, a need  
13 that can be identified by Ontario Hydro, and that need  
14 then could be communicated to the industry, and they  
15 can then go after trying to satisfy that need.

16                   I think that tying in to that need would  
17 be also having specific parameters associated with that  
18 need that can be communicated. Typically, when going  
19 out there with an competitive bid you like to identify  
20 the size of capacity block that you would be looking  
21 for, you would be in most cases dealing with location,  
22 so that people all have sort of the reasonable  
23 expectation as to where those projects would be.

24                   So there are a number of factors that we  
25 want to consider before we proceed with competitive

1 solicitation.

2 Q. Is a 3,100 megawatt industry the kind  
3 of industry that is capable of doing competitive  
4 bidding?

5 A. I would think that that would be a  
6 good indication, yes.

7 Q. On page 6 of your overheads in  
8 Exhibit 320 you put up a map that showed preferred  
9 areas for NUGs. Do you recall that? I don't think it  
10 is necessary to look at it. Do you recall that map?

11 MR. SNELSON: A. Yes, I certainly do.

12 Q. Okay. That kind of map, does that  
13 suggest to you perhaps there is a need for Ontario  
14 Hydro that might be met by competitive bidding given  
15 you have preferred areas?

16 MR. VYROSTKO: A. I think that that map  
17 would be an indication that there are important areas  
18 that we may want to encourage non-utility generators to  
19 locate within.

20 Q. And given the transmission  
21 constraints that you have also described, would that  
22 not also be a factor that would indicate perhaps it  
23 might be appropriate to consider competitive bidding so  
24 that you avoid the transmission constraints in  
25 particular areas?

1                   A. If competitive bidding was able to do  
2                   that and we would feel assured that requesting  
3                   proponents to bid within a location to do that, yes, I  
4                   think that's appropriate.

5                   Q. Competitive bidding essentially is an  
6                   opportunity for Ontario Hydro to direct the industry,  
7                   isn't it? You can choose the areas that you want to  
8                   receive proposals in and you can choose areas to avoid  
9                   where there is transmission requirements, you can  
10                  establish guidelines and criteria as well that might be  
11                  of use to you. It gives you a lot of control, doesn't  
12                  it?

13                  A. It does give some discipline and  
14                  control to the acquisition of projects, yes.

15                  MR. BROWN: A. I just want to add. The  
16                  selection of a spot in the province does not have to be  
17                  limited just to competitive bidding. You can do the  
18                  same thing under the old open solicitation process and  
19                  still restrict where NUGs are going to go into.

20                  Q. Would that apply to areas where you  
21                  have determined that there are transmission  
22                  constraints?

23                  A. I guess my point is that criteria  
24                  could be in any solicitation process.

25                  Q. In Exhibit 346, the new guidelines,

1 you indicated that at least under the current regime  
2 you are only prepared to reserve transmission capacity  
3 for a limited period of time because you don't want it  
4 tied up indefinitely because other projects can come  
5 along and take advantage of that if the first project  
6 doesn't. Do you recall that evidence?

7 MR. VYROSTKO: A. Yes, I do.

8 Q. Is that not a problem that could be  
9 overcome through competitive bidding? You could put  
10 the transmission capacity up for bids and then allow it  
11 to be taken up as a result of the bidding process?

12 A. That's correct. But as Mr. Brown  
13 said, any type of formal solicitation can address the  
14 same thing.

15 Q. I am just about finished. I have a  
16 couple of miscellaneous questions, I guess, to ask you  
17 at this point.

18 You talked about one source of  
19 non-utility generation being gas from landfill sites.  
20 What consideration have you given to gas from sewage  
21 control plants that also produce gas?

22 MR. BROWN: A. To date we recognize the  
23 technology as being used in the United States and  
24 possibly in Ontario. To date we do not see any  
25 evidence that the contribution from this technology

1 will exceed 5 megawatts, so it hasn't been included as  
2 of yet.

3 Q. Does Ontario Hydro have an inventory  
4 of potential sewage control plant sites in Ontario that  
5 could be used for this purpose?

6 A. No, I do not.

7 Q. Is this an area that you intend to  
8 assess from an inventory point of view?

9 A. I think it is important to watch the  
10 industry in terms of both the technical potential and  
11 the economics of the industry, and it's something that  
12 we will have to address in the near future if this  
13 industry looks like it's going to move forward.

14 Q. The fact that many utilities are  
15 operated by municipalities, does that offer you an  
16 opportunity to do at least an inventory of potential  
17 sites that produce this kind of gas as a starting point  
18 at least to determine what the ultimate achievable  
19 technology might be?

20 A. I think it is just a question of, do  
21 they have the appropriate information that we can  
22 determine how much can be produced at each site, I  
23 think it is easy to do an inventory of Ontario. It's  
24 just is there enough information to determine the  
25 amount of megawatts that can be taken from the off-gas.

1 Q. You will agree that when compared  
2 with landfill sites, the production of gas is not  
3 limited in time as it is in the landfill. A landfill  
4 eventually runs out of gas because of the decomposition  
5 processes finishes at some point. That's not of the  
6 same kind of restraint you see with sewage plants, is  
7 it?

23 Q. In any event, a nuclear reactor  
24 probably won't meet your 6,600 btu's per kilowatthour  
25 limit, will it?

1                   A. I don't know that.

2                   MR. MORAN: Thank you, panel.

3                   Those are all my questions, Mr. Chairman.

4                   THE CHAIRMAN: Thank you, Mr. Moran.

5                   You are next, are you, Mr. Greenspoon?

6                   MR. GREENSPOON: Yes.

7                   THE CHAIRMAN: Just before you start, I  
8                   have one housekeeping matter to be put on the record.

9                   Yesterday Mr. Starkman referred to the  
10                  draft guidelines, environmental guidelines for NUGs,  
11                  that was contained in Interrogatory 5.14.78, I don't  
12                  think we gave that a number.

13                  Could we give that a number now.

14                  THE REGISTRAR: 321.62.

15                  THE CHAIRMAN: Thank you.

16                  ---EXHIBIT NO. 321.62: Interrogatory No. 5.14.78.

17                  THE CHAIRMAN: Mr. Greenspoon, are you  
18                  ready to go?

19                  MR. GREENSPOON: Yes.

20                  CROSS-EXAMINATION BY MR. GREENSPOON:

21                  Q. Firstly, in volume 72, Mr. Snelson --

22                  THE CHAIRMAN: Is there a page?

23                  MR. GREENSPOON: Sorry. Page 13106.

24                  [12:30 p.m.]

25                  Q. Line 15, Mr. Snelson. We were

1 discussing what the cost of Darlington was per  
2 kilowatt. And you said on line 15, 16:

3 I haven't got a figure right at my  
4 fingertips. It's in the order of 2,000  
5 to \$3,000 a kilowatt.

6 I have prepared a spreadsheet that I gave  
7 to the clerk -- I guess I haven't given any to my  
8 friends.

9 THE REGISTRAR: Is this to be made an  
10 exhibit, Mr. Chairman?

11 THE CHAIRMAN: Yes, it is to be an  
12 exhibit.

13 THE REGISTRAR: 349.

14 ---EXHIBIT NO. 349: Spreadsheet entitled "Darlington  
15 Capital Cost".

16 MR. GREENSPOON: It's pretty simple  
17 math --

18 THE CHAIRMAN: Just give us a chance to  
19 get it in front of us.

20 MR. GREENSPOON: Sure. Hardly justifies  
21 the expense of a spreadsheet, but....

22 Q. But basically we are looking at a  
23 cost of Darlington at \$13.2 billion, four units of 881  
24 megawatts, that's a total of 3,524. The cost per  
25 megawatt is \$3.745 million. And divide that by a

1 thousand, you end up with about \$3,745 a kilowatt as  
2 opposed to your answer which says between 2 and \$3,000  
3 a kilowatt.

4 MR. SNELSON: A. I didn't intend to  
5 indicate between 2 or \$3,000. I intended to indicate  
6 of the order of 2 or 3,000.

7 Q. And what is the difference between  
8 those?

9 A. This is \$3,745, which is of the order  
10 of 3,000.

11 Q. Your answer is pretty clear on the  
12 record, Mr. Snelson. I think you are splitting hairs,  
13 but I won't debate it any further.

14 I just wanted to move on.

15 THE CHAIRMAN: Anyway Mr. Snelson, you  
16 don't quarrel with the estimate of 3,700?

17 MR. SNELSON: I don't quarrel with his  
18 figures, no. I would have come to the same answer too  
19 if I had looked the figures up and done the arithmetic.

20 MR. GREENSPOON: Q. But you didn't have  
21 it at your fingertips?

22 MR. SNELSON: A. I didn't have that  
23 number at my fingertips.

24 Q. Now, I just wanted to ask you I  
25 guess, panel, about some specific industries in

1 Northern Ontario. And I know you can't answer the  
2 question specifically but I will give you the names and  
3 you can give me a generic answer perhaps.

4 And that is Inco, Falconbridge,  
5 E.B. Eddy, and Algoma Steel. So those are the big  
6 users along the north shore of Lake Huron in  
7 northeastern Ontario at least. And leaving aside the  
8 pulp and paper industry and any other industries in  
9 northwestern Ontario, is it your estimation that there  
10 is waste heat now that isn't being used in cogeneration  
11 at those industries?

12 MR. BROWN: A. Yes, there is.

13 Q. And is any of that waste heat in the  
14 form of steam? That they are using steam in the  
15 process or that they are a steam host?

16 A. In the names you have listed, yes.

17 Q. And is there any heat at those  
18 industries that I have listed that isn't steam that is  
19 being vented or wasted or being put up a stack?

20 A. Yes, there is.

21 Q. And have you looked at recovery  
22 boilers in those processes at those industries to  
23 recover that heat and boil water and turn a turbine?

24 A. You mean Ontario Hydro doing this?

25 Q. Yes.

1                   A. Ontario Hydro has not.

2                   Q. Have the industries looked at that?

3                   Have you pointed out to them the possibilities of  
4                   recovery boilers. For example, at International Nickel  
5                   where they put out hundreds of thousands of tonnes up  
6                   their smoke stack every day, there is obviously a lot  
7                   of heat going up that stack and it's not in the form of  
8                   steam. Has it been suggested to Inco that perhaps they  
9                   could recover some of that heat?

10                  A. In terms of waste heat that is not  
11                  steam, it is a little more difficult than just running  
12                  it through a heat recovery boiler. And there are  
13                  technologies that are emerging to look at this and they  
14                  are not in a stage that are commercially applicable in  
15                  North America. We are looking at these technologies  
16                  and there is potential at these sites for this  
17                  technology to incorporate the waste heat recovery but  
18                  it is highly capital intensive.

19                  Q. So they are not in your forecast I  
20                  take it from your answer?

21                  A. If it is not steam, no, they are not  
22                  in my forecast.

23                  Q. Are any of these industries that I  
24                  named possible providers of dispatchable electricity  
25                  through cogeneration?

1                           A. Normally high-efficiency cogeneration  
2                           does not allow for dispatchability. The running of the  
3                           plant is driven by the steam requirements of the  
4                           facility rather than the requirements of Ontario Hydro.

5                           Q. Yes, is that the answer to the  
6                           question though? Is there any dispatchable possibility  
7                           at any of these industries?

8                           A. At every NUG site it is possible to  
9                           design a project that adds dispatchability.

10                          Q. Are you reluctant to answer the  
11                          question because of confidentiality or you just don't  
12                          think there is any.

13                          A. No, I am saying if it is high  
14                          efficiency there is limited availability for dispatch.  
15                          Under our new guidelines, if they follow those, yes,  
16                          those industries can take advantage of that and provide  
17                          dispatchability.

18                          Q. Let's turn to northwestern Ontario or  
19                          at least all the pulp, talk about pulp and paper.  
20                          Would you agree - maybe this isn't your area but I  
21                          would think you should know - that the new technologies  
22                          in pulp and paper, especially recycled paper are much  
23                          less electricity intensive than the present method of  
24                          cutting the logs down and making pulp and paper out of  
25                          them? Is it in your forecast that we are going to be

1 using less electricity in the pulp and paper industry  
2 in the future?

3                   A. My forecast is based on steam use,  
4 not electricity use. I believe there is a statement  
5 that it's less energy intensive to use recycled paper  
6 rather than virgin wood.

7                   Q. I guess maybe Mr. Snelson you could  
8 answer that then because what I am concerned about is  
9 that in fact if that's true we are going to have even  
10 more of a surplus in northwestern Ontario, if the pulp  
11 and paper industry goes to recycled paper?

12                  MR. SNELSON: A. Your question I think  
13 goes to the load forecast, which would be Mr. Burke's  
14 evidence on Panels 1 and 4. One has to recognize  
15 though - and I am not an expert in this area - but one  
16 has to recognize that there can be offsetting  
17 technology trends.

18                  You have talked about recycled paper  
19 being used as a feedstock for paper and that using less  
20 energy. We also are aware that there are technologies  
21 that are proposed for the pulp and paper industry that  
22 use more energy, more electrical energy, through a  
23 process called thermal mechanical pulping, which has a  
24 number of advantages, I understand. And this  
25 technology tends to use more of the raw wood. I

1 understand it has some environmental advantages and  
2 also produces a better quality product.

3 Q. We maybe have to await the outcome of  
4 the environmental assessment on timber to see if there  
5 are any trees left to make pulp out of.

6 A. I am only making the point that there  
7 are other technologies that may have offsetting trends.

8 Q. All right. But aside from that,  
9 electrical efficiency is the thing of the future and  
10 industries have caught on and it's probable that with  
11 the non-utility generation that you forecast in the  
12 northwest that there is going to be a surplus; there is  
13 more likely to be a surplus that we will use more,  
14 industrially?

15 A. I couldn't comment on the effect,  
16 overall effect on the load forecast.

17 Q. I have just a general question that  
18 really doesn't fit in anywhere. I am wondering about  
19 the public consultation process in your division. And  
20 I guess there is a statement that Mr. Eliesen made  
21 where he said that Hydro believes in exercising its  
22 corporate responsibility in a way that helps its  
23 customers in their communities. And I don't think that  
24 you would disagree with that as being a Hydro  
25 philosophy, to help the customers and the communities.

1                   And my question is: When a proponent of  
2                   a non-utility generation projects comes to Ontario  
3                   Hydro, how are the people of the area and particularly  
4                   northern Ontario, where you agreed most of the projects  
5                   are, or at least in the past 70 per cent of the  
6                   projects have been, how do you get input from the  
7                   people of northern Ontario as to whether they would  
8                   favour one type of cogeneration project over another;  
9                   for example, a non-utility generation at an industry or  
10                  a hydraulic project? Or how do they weigh off each of  
11                  those against the other? What is the public  
12                  participation component in your division or do you wait  
13                  for environmental assessment hearings?

14                   MR. VYROSTKO: A. No, we don't have a  
15                  public participation process that we manage within our  
16                  division. We expect the proponent to in fact involve  
17                  whatever community groups or whatever agencies are  
18                  necessary to have a project approved within the  
19                  jurisdiction that they have submitted a project forward  
20                  in. But it is not part of our process to do that.

21                   MR. SNELSON: A. Maybe if I can add to  
22                  that. With respect to the strategic statements that  
23                  have been made with respect to preference for certain  
24                  technologies, the encouragement of non-utility  
25                  generation and hydraulic generation, those statements

1 are taking a part of the Demand/Supply Planning  
2 Strategy; and throughout the process of preparing that  
3 there were very extensive public consultation programs,  
4 including northern communities, including interest  
5 groups from the north --

6 Q. But those were generic, those were  
7 not site specific?

8 A. Those were generic and led to the  
9 strategy, yes.

10 Q. I guess the one particular project  
11 that comes to mind is the Poplar Point on the Sturgeon  
12 River on Lake Nipigon. You know that one, Mr. Brown,  
13 do you? That's a 5.3 megawatt hydraulic project that  
14 was before the courts and apparently the Ministry of  
15 the Environment in its wisdom decided not to have an  
16 environmental assessment, although the courts seemed to  
17 indicate that they should have. Are you aware of that  
18 project?

19 MR. BROWN: A. I believe it's under a  
20 different name, but it is part of the inventory of  
21 hydraulic sites in Ontario.

22 Q. Mr. Snelson, you were the person to  
23 talk about transmission bottlenecks, I think, weren't  
24 you?

25 MR. SNELSON: A. Yes.

1                   Q. And I just wondered about a couple of  
2 things. The northeastern upgrade, the environmental  
3 assessment on the northeastern upgrade on the  
4 transmission corridor, is that going to be of any  
5 assistance to these non-utility generation problems  
6 that you spoke of? Or is it relevant?

7                   A. I am not sure which environmental  
8 assessment it is you are referring to.

9                   Q. Well, it is called the northeastern  
10 upgrade, northeastern transmission upgrade.

11                  A. I gave the evidence on transmission  
12 for this panel. The person with the most detail is Dr.  
13 Macedo on Panel 7.

14                  Q. Sure, okay.

15                  A. I could perhaps answer your question  
16 but he would answer it better than I can.

17                  Q. No, that's fair enough. That's good.  
18                  Just getting back to northwestern Ontario  
19 for a minute in the area of transmission. You  
20 certainly couldn't disagree, panel, that there won't be  
21 an electricity deficit in northwestern Ontario in the  
22 next 20 years?

23                  A. That is not our current forecast.  
24 Our current forecast is that there would be ample  
25 generation in northwestern Ontario. I have seen

1        northwestern Ontario in the time that I have been  
2        planning swing from surplus to deficit situations on an  
3        unpredictable basis. And so while we don't forecast  
4        that, I couldn't swear that that would not happen.

5                Q. So when you are upgrading your  
6        transmission system as far as northwestern Ontario is  
7        concerned, the idea is to get the electricity to  
8        Toronto? You are not shipping electricity up there.

9                A. No, I think we see that the  
10       integration of the northwest area, the northwestern  
11       region, into the rest of the system as being a  
12       long-term benefit to the system and a long-term benefit  
13       to the area of northwestern Ontario.

14               Q. So you are saying that you are not --  
15       Ontario Hydro is not planning to move electricity from  
16       northwestern Ontario to southern Ontario?

17               A. That is our current plan.

18               Q. That is your current plan, to not do  
19       that?

20               A. No, our current plan is that the  
21       direction of flow on the improved transmission will be  
22       predominantly from the west to the east.

23               Q. And from --

24               A. And that is why it is being built at  
25       this time.

1                   I do believe that in the long term the  
2                   improvement of the transmission between northwestern  
3                   region and the rest of the system is a benefit to the  
4                   system and specifically a benefit to northwestern  
5                   Ontario.

6                   Q. But for now the loads are all going  
7                   south?

8                   A. It is likely that for the period of  
9                   the Manitoba contract the flows will go from the west  
10                   to the east.

11                  Q. Now, have you considered -- I guess  
12                  these will be major supply NUGs. Has Ontario Hydro  
13                  considered small non-utility generating facilities of  
14                  the size of about 1 megawatt for peak, where the  
15                  facility would be built and it would be used maybe  
16                  eight hours a year or --

17                  THE CHAIRMAN: How many hours a year?

18                  MR. GREENSPOON: Eight hours a year,  
19                  let's say. A very minimal amount of hours per year.  
20                  And it would only be used for peak. And obviously it  
21                  would be a major supply NUG.

22                  Q. Has Ontario Hydro considered doing  
23                  that? For example, you would put one right in the  
24                  heart of the industrial electrical users area of  
25                  Ontario, a 1 megawatt major supply NUG.

1 MR. SNELSON: A. I don't believe we have.

2 Q. I am not sure if I asked you panel  
3 this, it has been a couple of weeks - I went through  
4 the transcript a few times but I didn't notice it -  
5 about the, I think I did, I recall....

16 Has Hydro investigated the possibility of  
17 this type of a machine, this type of a unit coming on  
18 the market in Canada?

19 MR. BROWN: A. We looked at that in  
20 terms of what we call package cogeneration which will  
21 range from your 5 kilowatts up to 5 megawatts all being  
22 treated in a similar manner.

23 Q. But this would be something that a  
24 fuel-switching incentive would apply to, I would say.  
25 I would ask you for \$5,000 maybe Ontario Hydro should

1 think that this is a better way, don't even hook the  
2 person up to the grid, it might be cheaper for Ontario  
3 Hydro to allow a user to buy one of these units for  
4 \$5,000 and maybe subsidize it.

7 Q. But not for a 5 kilowatt unit for one  
8 house?

9 A. Nobody has approached us, no.

10 Q. Are you aware of this unit that I am  
11 talking about that is made by Kohler?

15 Q. Has Ontario Hydro considered a  
16 premium, and I am talking past avoided cost, I am not  
17 talking about the 10 per cent or the 9 per cent, just a  
18 premium over and above avoided cost because you say  
19 that avoided cost includes all those other premiums for  
20 natives and non-profit non-utility generators?

21 [12:40 p.m.]

22 MR. VYROSTKO: A. At the current time we  
23 have not considered that.

24 Q. And I am talking about something over  
25 and above what you are already giving out and you

1 haven't considered that?

2 A. We have not considered that.

3 Q. Now, before Mr. Eliesen made his  
4 announcement several weeks ago, would you agree that in  
5 the last year you have signed up more non-utility  
6 generation than was in the 1991 forecast?

7 MR. BROWN: A. That's not true. We  
8 haven't signed these up yet. At the current stage  
9 there is 735 megawatts in-service and committed, and  
10 those are actually falling short of my forecast of the  
11 early stages of the 1990 NUG plan.

12 Q. 1991?

13 A. 1990.

14 Q. 1990.

15 In the last ten months you have signed up  
16 ten projects for about 1,000 megawatts, haven't you?

17 A. Those are included in the 700 plus  
18 some additional ones, that's correct.

19 Q. And would it be fair to say that  
20 that's about the fastest 1,000 megawatts that Ontario  
21 Hydro has ever produced or signed up or gotten in the  
22 last quarter century?

23 A. In terms of signing up, I think it  
24 probably set a record. In terms of going in-service I  
25 am not sure of that yet.

1                   Q. Well, just related to that. If you  
2        could look at yesterday's transcript, Volume 75, page  
3        13507, Mr. Snelson, line 10, you say there, after  
4        megawatts, you say:

5                   "....because we are already into  
6        surplus capacity from a few years before  
7        the year 2000 until about 2005."

8                   So, can I take it from that statement  
9        that we are already in a surplus capacity until 2005,  
10       that what we are really here at this Demand/Supply Plan  
11       Hearing is for projects after 2005, because we are in a  
12       surplus until 2005?

13                  MR. SNELSON: A. My comments at that  
14        point were relating to figure 10 of Exhibit 320, which  
15       was the overheads that we used for our direct evidence  
16       for this panel, and that shows a surplus in capacity  
17       for about the time that I indicated, and that is with  
18       median load growth.

19                  We also have to recognize that with  
20        higher load growth that is possible, there could be  
21       quite a considerably higher need and much earlier need.  
22       So I think that we are here to look at both  
23       circumstances.

24                  Q. Okay. Now, again with risking  
25        covering some ground that I have already covered, just

1       very quickly. You are paying the same buy-back rate  
2       for cogeneration as you are for hydraulic, is that  
3       roughly a true statement? Same premium.

4                    MR. BROWN: A. If it's a high-efficiency  
5       cogeneration, they would be the same.

6                    Q. All right. And yet you would agree  
7       that in terms of impacts on the environment, the  
8       hydraulic has less impact? It's renewable.

9                    At least let's forget about my first  
10      statement that it has less impact on the environment.  
11      It's certainly renewable whereas the cogeneration is  
12      not?

13                  A. Cogeneration can use renewable fuels  
14      such as wood waste.

15                  Q. I thought wood waste wasn't  
16      cogeneration.

17                  A. Wood waste is a fuel like natural gas  
18      is a fuel.

19                  Q. I thought you said that wood waste  
20      was going to be dealt with as an alternative in Panel  
21      8.

22                  A. You are talking about biomass  
23      harvesting techniques. Wood waste such as used in pulp  
24      and paper mills is different.

25                  Q. Let's forget about wood waste then.

Most of the cogeneration in this province  
is not wood waste; most of it is natural gas?

A. That's correct.

Q. It's not a renewable fuel?

A. That's correct.

Q. And water is a renewable fuel?

A. Yes, it is.

Q. So why don't you pay more for water than you do for natural gas? Why don't you pay for more for hydraulic than you do for cogeneration?

A. In terms of our preference, they are equally. And it's not just because it's fuel, you have to look at the whole aspect of hydro facility. There could be some environmental mitigation requirements.

Q. All right. Well, let's say we screen all of those. We environmentally screen all of the impacts of the hydraulic, and I guess we will get into that maybe in the Hydraulic Panel. But let's assume that it is a run-of-the-river hydraulic, that there is no reservoir, or that the reservoir is minimal, why wouldn't you pay more than?

MR. SNELSON: A. I think that the thinking that went in the preference premium tried to differentiate between preferred technologies and

1 non-preferred technologies. It was a reflection of the  
2 opinions that were expressed through the discussions  
3 with the public that we had, through the preparations  
4 of a Demand/Supply Planning Strategy, and through that  
5 process we recognized cogeneration, high-efficiency  
6 cogeneration even if it uses non-renewable fuel as  
7 being the preferred technology because that is the  
8 highest efficiency way of using a non-renewable fuel.  
9 We also recognized hydraulic generation as being a  
10 preferred technology based on the renewability of the  
11 fuel and the recognition that the environmental  
12 effects, while not negligible, were more localized and  
13 provided that those could be acceptably managed, that  
14 that was a preferred technology.

15 Q. Just turning to reliability for a  
16 minute. Ontario Hydro has co-existed with non-utility  
17 generations, Great Lakes Power, Peterborough Public  
18 Utility Commission. Would it be fair to say that the  
19 reliability of non-utility generation has been  
20 demonstrated over the years? Would you agree with  
21 that?

22 MR. BROWN: A. I think in terms of being  
23 in existence it's been demonstrated and the life has  
24 been demonstrated. It's difficult to say in  
25 quantitative terms what their reliability has been.

1                           Q. But in determining this premium, and  
2                           I don't want to belabour the point, this will be my  
3                           last try to get at it maybe from a different angle, but  
4                           you have got to compare it to some of the other  
5                           alternatives. You have got to compare it to nuclear  
6                           and coal. I would suggest to you, you should compare  
7                           it on performance.

8                           Isn't it true that if we look at  
9                           Pickering "A", for example, and the costs of retubing,  
10                          Mr. Snelson, that really what we are doing is we are  
11                          putting non-utility generation up against coal at  
12                          Lambton. Isn't it true that Lambton is cheaper than  
13                          Pickering "A", and that's what we are having to stack  
14                          non-utility generation up against, is coal?

15                          MR. SNELSON: A. I believe that you will  
16                          see in the later panels the comparison of coal versus  
17                          nuclear. Over most of its life, at least, Pickering  
18                          has been cheaper than Lambton, that comparison has been  
19                          done on a regular basis, and in fact --

20                          Q. But let's say right now.

21                          A. On a one year basis I don't think  
22                          it's a fair comparison because you have one unit  
23                          out-of-service at the moment for retubing, which is a  
24                          major procedure which we expect to do about once in the  
25                          life of the station. So I think the fairer comparison

1 is to compare on a lifetime base.

2 Q. Even leaving aside the issue of which  
3 one is cheaper, Pickering "A" or Lambton, you can't  
4 disagree that with the cost of acid rain and the cost  
5 of global warming, that it would make sense for Ontario  
6 Hydro to consider another premium for hydraulic  
7 generation, small scale, especially small scale  
8 hydraulic, river-run generation?

9 A. We haven't identified such a premium.  
10 We have addressed the cost of acid gas control.

11 Q. Okay. Has Ontario Hydro ever had to  
12 pay anything for repairs for a NUG?

13 MR. VYROSTKO: A. I don't believe so.

14 Q. No. And how much did Hydro pay to  
15 retube Pickering?

16 MR. SNELSON: A. Having being caught out  
17 once without numbers at my fingertips, I'm not going  
18 to --

19 Q. Substantially more than nothing?

20 A. Substantially more than nothing.

21 However, I will say that the nuclear  
22 costs which are used in avoided costs do include the  
23 cost of retubing, and that is included in the avoided  
24 cost calculation.

25 Q. Now, I don't know if this is before

1 my time because somebody told me about it, maybe it's  
2 not. This is the off-the-shelf mini-hydel that Hydro  
3 developed, maybe you know about that. The phrase or  
4 the name that I was given was the "Tin Can Powerhouse".  
5 Does that ring a bell with anybody on the panel?

6 MR. BROWN: A. Not by that name.

7 Q. Not by that name. Do you what I am  
8 talking about? It had a Barber hydraulic turbine?

9 A. I believe there was two installed,  
10 one in a remote community of Sultan --

11 Q. Sultan and Wasdell?

12 A. And the other one was Wasdell.

13 Q. That's right. So this was an  
14 off-the-shelf mini-hydel that Ontario Hydro developed  
15 or had developed and could install or have installed?

16 A. Hydro is looking at this technology  
17 as a demonstration type project to lead the industry  
18 into moving into that direction.

19 Q. Did you say Hydro is or was?

20 A. These, I believe, are early '80  
21 projects.

22 Q. Right. And what happened to them?

23 A. They are in-service.

24 Q. Is the program still alive?

25 A. This was a demonstration project to

1 lead the industry, so the industry would consider such  
2 projects.

3 Q. Just backing up for a minute. Are  
4 they still being used has demonstration projects?

5 A. Well, since they are a hydraulic  
6 facility, their life would be very long and those  
7 facilities are still in service.

8 Q. And this was Ontario technology, the  
9 Barber turbine is made in Ontario?

10 A. Yes, Niagara Falls.

11 Q. And are you demonstrating this?  
12 Because my understanding was, the merit of this was  
13 that it was the same unit that could be used in many  
14 places; isn't that true?

15 A. That was the intent.

16 Q. It was an off-the-shelf unit, so you  
17 wouldn't have to design it site-specific; isn't that  
18 true?

19 A. No, there was still site preparation  
20 that had to be done.

21 Q. But you could use the same unit,  
22 basically, the same turbine?

23 A. The turbine, yes.

24 Q. Now, are you demonstrating this to  
25 the First Nations in Northern Ontario, that they can do

1 this, that there is an off-the-shelf turbine at Barber  
2 Turbine in Niagara Falls?

3 A. Remember, this was a demonstration of  
4 this technology. The results of that were that this is  
5 not very economical.

6 Our efforts right now are looking at any  
7 technology in small hydro that is economic, not  
8 necessarily mini-hydel.

9 Q. Okay, well maybe we will get into the  
10 economics in a minute.

11 I just want to ask, how many Ontario  
12 Hydro staff now are involved in developing small  
13 hydraulic?

14 A. I think you have to refer to Panel 6  
15 for that.

16 Q. Just getting back to the economics  
17 for a second. In Volume 67, page 11990. Mr. Vyroostko,  
18 I think.

19 I can probably finish by quarter after  
20 one.

21 THE CHAIRMAN: No, unless you have to  
22 make a plane or something, I would just as soon take  
23 the normal time off.

24 MR. GREENSPOON: Okay, it doesn't to me.  
25 I will just finish this point.

1 THE CHAIRMAN: All right.

2 MR. GREENSPOON: Q. Mr. Vyrostko, you  
3 are saying at line 7:

4                         "...if we look at Ontario Hydro, it  
5                         has, in fact, matured as an industry and  
6                         has focused on building large facilities.  
7                         Its structure, its expertise is in  
8                         building major plants.

19 So, really what it comes down to is the  
20 preferred option, the one that you say you haven't  
21 looked at to give a premium to, the hydraulic option  
22 that has little or less environmental impacts, this is  
23 the one that Ontario Hydro can't do. You are not  
24 structurally set up to do the preferred option. The  
25 best thing we can do, you can't do it: isn't that

1 right?

2 MR. VYROSTKO: A. I think from a  
3 non-utility generation perspective that's how we are  
4 structured.

5 Q. That wasn't the question. You don't  
6 do it. You did it in 80s. We heard that from Mr.  
7 Brown, you set up a demonstration project, he says.  
8 You are not doing it.

9 A. We are not -- we, as Ontario Hydro,  
10 are not doing small projects.

11 MR. GREENSPOON: I have got another ten  
12 minutes.

13 THE CHAIRMAN: We will adjourn now until  
14 2:30.

15 THE REGISTRAR: This hearing will adjourn  
16 until 2:30.

17 ---Luncheon recess at 12:58 p.m.

18 ---On resuming at 2:34 p.m.

19 THE REGISTRAR: Please come to order.  
20 This hearing is now in session. Be seated, please.

21 THE CHAIRMAN: Mr. Greenspoon.

22 MR. GREENSPOON: Thank you, Mr. Chairman.

23 Q. Just a few more points, panel. I  
24 wanted to go over some of the general, as I see them,  
25 just review with you and maybe from a different

1 perspective from the point of view of at least some of  
2 these from northern Ontario the major benefits of small  
3 hydraulic and high-efficiency cogeneration in northern  
4 Ontario.

5 You would agree that in most cases, at  
6 least as compared to major construction projects as you  
7 have described them in your evidence earlier, the  
8 megaprojects, that small hydraulic and cogeneration  
9 have a faster lead time? Is that fair to say?

10 MR. VYROSTKO: A. That's fair to say.

11 Q. And they also provide a flexibility  
12 of fuel options? Wood waste, whatever fuel the steam  
13 generator is using, hydraulic?

14 A. They provide other fuel sources than  
15 typical major supply --

16 Q. Nuclear and coal.

17 For the most part they are either  
18 renewable or they are high efficiency as we said. We  
19 are using in Ontario 29 per cent uranium, 30 per cent  
20 coal; is that roughly....

21 MR. SNELSON: A. I am not sure what your  
22 percentages are, how they are calculated.

23 Q. In terms of the mode of generation.

24 A. In terms of the electrical energy  
25 that is generated --

1                   Q. No, in terms of the fuel, the mix.

2                   Our mix is about 29 per cent uranium, 35 per cent coal  
3                   right now?

4                   A. Is that in capacity or in energy?

5                   Q. In capacity.

6                   A. That's given in the existing system  
7                   chapter but it is....

8                   Q. In any case with NUGs we are talking  
9                   about renewability or high efficiency; you agree with  
10                  that?

11                  MR. VYROSTKO: A. That's correct,  
12                  although high efficiency uses non-renewable fuels.

13                  Q. And the technologies are proven, they  
14                  are very reliable?

15                  A. In most of the situations. For  
16                  instance, landfill gas is a reasonably new technology  
17                  and so that is not quite as proven as, for instance,  
18                  cogeneration is in using natural gas.

19                  Q. And in terms of northern Ontario  
20                  again, geographically we have a regional diversity with  
21                  non-utility generation as opposed to a major  
22                  megaproject where it ends up in one area? There is a  
23                  regional diversity to a NUG?

24                  A. Yes. Anywhere in the province, that  
25                  would give it that regional credit, yes.

1                   Q. And basically Ontario Hydro pays for  
2 performance with a non-utility generation. There is  
3 no -- there is a minimal risk, there is no risk of cost  
4 overruns, breakdowns, those risks are not borne by  
5 Ontario Hydro?

6                   A. That's correct.

7                   Q. And because of the point before that  
8 I made, because of regional diversity, there tends to  
9 be regional spin-offs, economic and employment  
10 spin-offs from a non-utility generator?

11                  A. Yes, I think there are spin-offs  
12 associated with a non-utility generator just like there  
13 would be spin-offs with any other type of  
14 activity.

15                  Q. And we can often with a non-utility  
16 generation, with a NUG, you can often match a load to a  
17 site. You can put your generator in proximity to where  
18 it's needed?

19                  A. That's one of the advantages.

20                  Q. That's another advantage. All right.

21                  Now I think you answered this question  
22 before, but just to reiterate: You at Ontario Hydro  
23 are not doing any of these things, you are facilitating  
24 other people to do them, you are contracting them out,  
25 but you don't do it any more?

1                   A. Don't do what any more?

2                   Q. Non-utility, you don't do any of this  
3                   non-utility generation?

4                   A. Well, I guess we never did  
5                   non-utility generation before.

6                   Q. All right. I am using it in its  
7                   broadest sense. You are not doing any small hydraulic  
8                   any more?

9                   A. We have a few small hydro projects  
10                  under way, for instance, Lake Gibson in the Niagara  
11                  Region.

12                  Q. And how big is that?

13                  A. I think around 6 megawatts. So, it  
14                  is not that we aren't doing any, we are doing some  
15                  selective projects.

16                  Q. Is that the only one you have?

17                  MR. SNELSON: A. There are some other  
18                  hydraulic projects which will be discussed in Panel 6  
19                  such as Big Chute, which is a redevelopment of a  
20                  hydraulic site.

21                  Q. And how many megawatts is that?

22                  A. I would hazard a guess at about 10 or  
23                  12 megawatts.

24                  Q. So under 5 megawatts you are not  
25                  doing any?

1 MR. BROWN: A. We have existing  
2 facilities under 5 which we discuss in Panel 6 which  
3 are under the Sharp program to enhance the performance  
4 of those facilities.

5 Q. But you are not developing any under  
6 5; you are contracting them out under your NUG program?

8 Q. And as far as cogeneration, you are  
9 not going in, you said you won't go in and do a  
10 cogeneration?

11 MR. VYROSTKO: A. We have not done that,  
12 that's correct.

13 Q. Now isn't it true that you have left  
14 the field open for other utilities to go in and do  
15 that?

21 Q. What about at the McDonnell Douglas  
22 plant in Malton where TransAlta from Alberta went in  
23 and put a cogenerator in? And TransAlta is a utility  
24 in Alberta and they came into Ontario and they put a  
25 cogenerator at McDonnell Douglas in Malton and now they

1 are selling electricity back to you and making money at  
2 it? Why didn't you go in there and do it?

3                   A. I think as we said before, we have  
4 not seen ourselves going into industrial facilities and  
5 setting up an operation in partnership with an  
6 industrial site to do a project. We have never done  
7 that in the past; and at this time, we don't see that  
8 as being necessarily of benefit to us if we can have  
9 other people do that. And right now our non-utility  
10 generation program allows that to happen with the  
11 various benefits to both ourselves and the developers.

12                   Q. It is 170 megawatts at McDonnell  
13 Douglas.

14                   A. I believe it is about 100 megawatts.

15                   Q. My figures are 170. Let's say it's a  
16 hundred. And a utility from Alberta can come in here  
17 to Ontario and make it pay and you can't do it?

18                   A. I don't think that we necessarily  
19 said we can't make it pay. I think what we said is  
20 that our business has always been to provide major  
21 facilities and to transmit and distribute power within  
22 the province.

23                   Q. And likewise at the Ottawa Health  
24 Sciences Building, 67 megawatts, TransAlta again went  
25 in there and put a cogenerator in there; and they are

1        selling it back to you and they are making money right  
2        here in the Province of Ontario, from Alberta they  
3        came.

4                    A. That's correct.

5                    Q. So basically what you said in your  
6        direct evidence that Ontario Hydro is structurally  
7        incapable of doing things like this?

8                    A. I guess what I said in direct  
9        evidence was that Ontario Hydro has basically developed  
10      its strength building large-scale projects that in fact  
11      bring advantages to the province. And because we have  
12      built large-scale projects, we haven't gone after the  
13      small ones, and that has been an opportunity now that  
14      the private sector can go after. And so we are leaving  
15      it up to the private sector at this time to go after  
16      the smaller projects.

17                  Q. How does that reconcile with the  
18        demand management program? If you are structurally  
19        incapable of doing these small hydraulic and small  
20        cogenerating projects, how can you be structurally  
21        capable of doing demand management which is also small  
22        scale?

23                  A. I guess I can't speak in detail with  
24        respect to some of the demand management programs, but  
25        I believe Ontario Hydro is a utility that serves

1       customers; and I think therefore as long as we are  
2       dealing with specific initiatives with customers, then  
3       we are appropriately situated to do that.

4                   Q. Well, I would suggest just in closing  
5       that it's probably a mistake for Ontario Hydro not to  
6       have gone into McDonnell Douglas and the Health  
7       Sciences Building in Ottawa. Wouldn't you agree?

8                   A. No, I would not.

9                   MR. GREENSPOON: You would not.

10                  Okay, those are all the questions I have.  
11                  Thank you.

12                  THE CHAIRMAN: Mr. Klippenstein, you are  
13       next?

14                  MR. KLIPPENSTEIN: Thank you, Mr.  
15       Chairman.

16                  Mr. Chairman, I confess that the scope of  
17       today's cross-examination is still being determined. I  
18       understand that Exhibit 344 was filed recently,  
19       yesterday perhaps, that somewhat defines to what degree  
20       the subjects that concern Pollution Probe will be dealt  
21       with in this panel as opposed to another panel, in  
22       Panel 8.

23                  THE CHAIRMAN: 344 did you say?

24                  MR. KLIPPENSTEIN: Yes.

25                  THE REGISTRAR: That was prefiled, Mr.

1 Chairman.

2 THE CHAIRMAN: Have we got it?

3 MR. B. CAMPBELL: It is the alternative  
4 energy review that we filed recently.

5 MR. KLIPPENSTEIN: It looks something  
6 like that.

7 THE CHAIRMAN: Yes, I have seen it. You  
8 intend to refer to it?

9 MR. KLIPPENSTEIN: I don't propose to  
10 refer to it and I don't intend that you need to have a  
11 look at it.

12 My point is that some of the matters that  
13 I intended to cross-examine today, I think, subject to  
14 perhaps comments from Mr. Campbell or the panel, will  
15 be best handled by Panel 8; in fact, perhaps most of  
16 the material may be better handled in Panel 8. There  
17 was a little bit of confusion and difficulty sorting  
18 the issues out there.

19 That goes for the panelists as well. If  
20 you feel a question is better directed to Panel 8, feel  
21 free to so comment.

22 CROSS-EXAMINATION BY MR. KLIPPENSTEIN:

23 Q. I take it from the discussion so far  
24 and from particularly Exhibit 344, that Ontario Hydro  
25 still considers the incineration of municipal solid

1       waste as an acceptable and viable alternative for the  
2        production of electricity?

3                    MR. BROWN: A. It is our opinion that  
4        the technology is proven and can provide electricity;  
5        and if a facility obtains approval, we are willing to  
6        buy electricity from that facility.

7                    Q. And the effect of the present  
8        government ban on these facilities is merely that you  
9        expect some delay in the development of these  
10       facilities; is that correct?

11                  A. No, I think the ban is a very good  
12        step in enforcing recycling and I think it's a needed  
13        step. I guess our position is we are not sure if the  
14        recycling will be enough and that other communities,  
15        such as Europe and the United States, who have  
16        successful recycling programs still consider this an  
17       option.

18                  At this time in the forecast of  
19        non-utility generators, we are looking at this as a  
20        future option; and if it's an unnecessary option, we  
21        will think about removing it in the future. Right now  
22       it is an open option.

23                  Q. And would you agree that there is an  
24        inverse relationship to a point between the success of  
25       recycling programs and the success of municipal solid

1       waste incinerators? In other words, the more materials  
2       are removed from the waste stream, the more difficult  
3       it is to create an incinerator that is economically  
4       viable?

5                   A. No, I think the direction in this  
6       business is to combine the two efforts into a central  
7       facility where the recycling is done as a fuel enters  
8       the plant and then the incineration is what's left  
9       over.

10                  Q. Would you agree that if a very  
11       successful recycling program or set of programs is in  
12       place, that removes -- pick any number, 50 per cent of  
13       the waste stream or the waste from the waste stream,  
14       that requires the remaining waste to be collected from  
15       a larger area in order to make a particular incinerator  
16       viable? Is that fair?

17                  A. If the sizes remain the same, that's  
18       correct.

19                  Q. And can the size of the incinerators  
20       be reduced in that situation, with them still remaining  
21       economically viable?

22                  A. The economics of MSW is really driven  
23       by the price of the tipping fee; and if the tipping fee  
24       goes up, then the size that is economical will go down.

25                  Q. And why as I understand the evidence

1 from Hydro is it the case that smaller communities are  
2 not economically hospitable to an incinerator if what  
3 you say is true?

4 A. It's mainly because the tipping fees  
5 in smaller communities are a lot smaller than they are  
6 say in Toronto; and the other thing is they have more  
7 access to landfill opportunities than a constrained  
8 environment like greater Toronto.

9 Q. If I can focus for a moment on some  
10 of the basic assumptions in your projection of waste  
11 from or energy from municipal waste incineration, one  
12 of the assumptions - and correct me if I'm wrong - is  
13 that 45 tonnes of municipal waste will yield 1 megawatt  
14 of electrical capacity. I say 45, I believe some of  
15 the material says somewhere between 40 and 50. That's  
16 one of the key assumptions.

17 A. Yes, I think that's in the ballpark.

18 Q. A second assumption is that  
19 communities with populations over 50,000 generate  
20 enough garbage within a small area to make an  
21 incinerator feasible; is that one of the key  
22 assumptions as well?

23 A. Yes, it is.

24 Q. Why is that assumption necessary if  
25 what you just mentioned to me is true about smaller

1       communities supporting an incinerator?

2                   A. I think my point was that a small  
3       community that doesn't have landfill site opportunities  
4       could have a very economic MSW incinerator. It is just  
5       that in Ontario a lot of the small centres are in  
6       remote parts of the province where landfill is not a  
7       problem and therefore the tipping fees are very small  
8       making them uneconomic.

9                   DR. CONNELL: Mr. Klippenstein, what was  
10       the equivalence again, if I may ask you to repeat the  
11       figure?

12                  MR. KLIPPENSTEIN: 50,000 is the figure.

13                  DR. CONNELL: 50,000 units of what?

14                  MR. KLIPPENSTEIN: That's a reference to  
15       the population or community size.

16                  DR. CONNELL: I'm sorry, the one before  
17       that.

18                  MR. KLIPPENSTEIN: Sorry, that was 45  
19       tonnes will yield 1 megawatt of electrical capacity.

20                  DR. CONNELL: In what time period?

21                  MR. BROWN: Per day.

22                  DR. CONNELL: Thank you.

23                  MR. KLIPPENSTEIN: 45 tonnes per day I'm  
24       sorry, yes.

25                  Q. Are those assumptions, the 45 tonnes

1 per day generating 1 megawatt and the 50,000 population  
2 threshold, the basic assumptions in the projection?  
3 Are there any others that are missing?

4 MR. BROWN: A. We have included a 35 per  
5 cent recycling effort and we do treat the areas outside  
6 Toronto a little bit differently than Toronto itself in  
7 terms of collectability of the MSW.

8 Q. And how do you treat them  
9 differently?

10 A. I think we would expect a greater  
11 chance of a project going in in a larger population  
12 centre.

13 Q. For the reasons you mentioned before?

14 A. Yes.

15 Q. Is there any other reason why you  
16 would expect that, other than what you have just  
17 mentioned?

18 A. None in the forecast.

19 Q. Can I ask a few questions about the  
20 assumption of 45 tonnes per day producing 1 megawatt.

21 Do any operating incinerators in Ontario  
22 actually achieve that proportion, do you know?

23 A. They all have capacity greater than  
24 that.

25 Q. I'm not really referring to capacity.

1 I'm talking about actual production; in other words,  
2 using 45 tonnes producing 1 megawatt.

3 A. I don't have that information. It's  
4 probably provided in a reference in the 1990 NUG plan  
5 or in Exhibit 344.

6 Q. Now the only references that I am  
7 aware of contained in the 1990 NUG plan are a report  
8 from December of 1989 entitled "Energy from Municipal  
9 Solid Waste Issues" and a four-page report by Mr.  
10 Rosson, I believe.

11 [2:55 p.m.]

12 As far as I am aware that information is  
13 not contained in those reports. I will check that.  
14 Other than what is in those reports and the NUG plan,  
15 you wouldn't have any information, and I guess in  
16 Exhibit 344, you wouldn't have any information about  
17 which plants in Ontario actually operate on that  
18 assumption or meet that assumption; is that correct?

19 A. That's correct.

20 Q. What about broadening the net a bit  
21 and asking about Canada. Do you have any information  
22 about how many plants in Canada meet that 45 tonnes per  
23 day per megawatt production level?

24 A. That will be, if it is provided, it  
25 would be in Exhibit 344, or reference, the two

1 references in the 1990 NUG plan.

2 Q. I take it that those might be  
3 appropriate subjects for Panel 8, as well; is that  
4 correct?

5 A. The determination of an existing  
6 facility?

7 Q. The assumption of the amount of waste  
8 required to produce a megawatt, for example. I know  
9 they are dealt with extensively in Exhibit 344 which  
10 was just produced a day or two ago, and I am just  
11 wondering whether they can also be addressed in Panel  
12 8?

13 A. I think since Exhibit 344 was done  
14 after I did my forecast, if you want to talk to their  
15 assumptions you have to wait for Panel 8.

16 In terms of the assumptions I used in the  
17 forecast, I used Reference No. 2 for the 1990 NUG plan.  
18 I will have to find in the report where that is found.

19 Q. Okay. Well, in your forecast then,  
20 is it fair to say that your basic document would have  
21 been Reference No. 2, which is the December 1989  
22 document?

23 A. That's correct.

24 Q. And that was a response to Pollution  
25 Probe's Interrogatory 5.19.4.

1                   THE CHAIRMAN: Just hold on. 5.19.4?

2                   MR. KLIPPENSTEIN: That's correct.

3                   THE CHAIRMAN: Has that been referred to  
4 before?

5                   THE REGISTRAR: I am just checking.

6                   No, that will be 321.63.

7                   THE CHAIRMAN: Thank you.

8                   ---EXHIBIT NO. 321.63: Interrogatory No. 5.19.4

9                   MR. KLIPPENSTEIN: Q. I take it that you  
10 don't know whether any incinerators in Canada meet your  
11 assumption of 45 tonnes per day for a megawatt?

12                   MR. BROWN: A. I don't have the  
13 information at my fingertips, no.

14                   Q. Do you know where you obtained that  
15 assumption? What is the source of that assumption?

16                   A. It would have been based on Reference  
17 No. 2 in the 1990 NUG plan, plus any proposals that we  
18 had received at the time from other areas in the  
19 province.

20                   Q. Proposals meaning municipalities or  
21 project proponents? What sort of proposals would these  
22 be?

23                   A. I am not sure if the proponent is a  
24 municipality or private individual. We had six or  
25 seven MSW proposals before us when we did the 1990 NUG

1 plan.

2 Q. And those are the sources of your  
3 information or form part of the source of your  
4 information for this assumption; is that right?

5 A. That's correct.

6 Q. Would it be fair to say that that  
7 assumption is key to your forecast? That is a key  
8 assumption, the 45 --

9 A. Well, if you change the 45 you will  
10 definitely get a different answer in terms of the  
11 capability.

12 I may want to add, if you turn to page  
13 30, the number 45 is quoted in the second paragraph,  
14 Section 8 of that report.

15 THE CHAIRMAN: Hold it. Where are we  
16 now? I'm sorry.

17 MR. BROWN: This is the 1990 NUG plan,  
18 Reference No. 2, which is in the interrogatory just  
19 referenced.

20 THE CHAIRMAN: That's the Ontario Hydro  
21 Energy from Municipal Solid Waste, Mechanical  
22 Equipment, Engineering Department?

23 MR. BROWN: Correct. On page 30 of that  
24 report, the second paragraph says:

25 In general, as a rule of thumb, to

1 produce one megawatt of power requires 45  
2 tonnes per day of refuse capacity.

3 MR. KLIPPENSTEIN: Q. And that rule of  
4 thumb you obtained from the six or seven proposals that  
5 you had --

6 MR. BROWN: A. I am not the author of  
7 this report. These are people in Ontario Hydro who  
8 have done a lot more research into this than I have to  
9 come up with this number. This is their findings from  
10 their work.

11 Q. Is there any way I can find out what  
12 is the basis for their rule of thumb as they refer to  
13 it?

14 Can you undertake to inform me what  
15 information they relied on to come to that assumption?  
16 Is that possible?

17 MR. B. CAMPBELL: It's clear I think from  
18 your previous questions that the members of this panel  
19 don't have, at least here, the background information  
20 to support that 45 tonne per megawatt figure and we are  
21 prepared to give an undertaking to provide information  
22 supporting that figure.

23 THE CHAIRMAN: All right. No.?

24 THE REGISTRAR: 322.23.

25 THE CHAIRMAN: Thank you.

1        ---UNDERTAKING NO. 322.23: Ontario Hydro undertakes to  
2            give background to support the 45 tonne  
3            per day per megawatt capacity assumption  
4            for municipal solid waste and whether any  
5            incinerator in Canada meets that  
6            assumption.

7            MR. KLIPPENSTEIN: Thank you.

8            Q. If you have any information - this is  
9            following up on my previous question on the similar  
10            topic - if you have any information as to whether or  
11            not any incinerators in Ontario or Canada actually meet  
12            that, would you undertake to tell me?

13            MR. BROWN: A. I think we can add that  
14            to the undertaking.

15            Q. Thank you.

16            MR. B. CAMPBELL: Just so we are clear in  
17            giving this undertaking, we are not volunteering to do  
18            a comprehensive survey across Canada. What we are  
19            saying is we will go back and see what we relied on,  
20            including knowledge of existing incinerators in putting  
21            forward that 45 tonne per megawatt figure.

22            MR. KLIPPENSTEIN: That's fair enough.  
23            Thank you.

24            Q. Are there any support programs or  
25            financial inducements which Hydro makes available to an  
              incinerator or a proposed incinerator of municipal  
              solid waste? I take it it wouldn't be applicable now

1 because of government's policy, but that either existed  
2 before the policy or might resume should such policy  
3 change.

4 MR. BROWN: A. It's less than 5  
5 megawatts it would fall under our standard rates for  
6 renewable projects, which means it qualifies for the  
7 Option 2 or Option 3. And if it's greater than 5, it  
8 would qualify for the 10 per cent premium.

9 If it's load displacement it might  
10 qualify for financial assistance. If they are looking  
11 at assistance in performing a prefeasibility study or  
12 feasibility study, we may assist them as well.

13 Q. Are there any guidelines that apply  
14 to such -- I guess that's special consultant study  
15 funding, is that what you are referring to?

16 A. That's correct.

17 Q. Are there any particular guidelines  
18 that apply to that that would tell me the likelihood of  
19 obtaining it?

20 THE CHAIRMAN: Did I hear you say that if  
21 you have less than 5 megawatts you don't get the  
22 premium, the 10 per cent premium?

23 MR. BROWN: Sorry. You do get the  
24 premium, it's in Option 2 of the standard rates. But  
25 he also qualified for Option 3 which is the front-end

1 loading of Option 2.

2 MR. KLIPPENSTEIN: Q. I will try and  
3 repeat my question. Can you tell me, are there any  
4 program guidelines or similar guides to tell me how or  
5 what criteria are applied to such consultant funding?

6 MR. BROWN: A. There is a program  
7 document on consultant study assistance, and I believe  
8 it may be in several other interrogatories that I have.

9 5.4.3.

10 THE REGISTRAR: 5.4...?

11 MR. BROWN: 3.

12 That interrogatory has both the financial  
13 assistance and the consultant study assistance  
14 programs.

15 MR. KLIPPENSTEIN: Thank you.

16 THE CHAIRMAN: Just a moment. We will  
17 see if it needs a number.

18 THE REGISTRAR: That will be 321.64.

19 THE CHAIRMAN: Thank you.

20 ---EXHIBIT NO. 321.64: Interrogatory No. 5.4.3.

21 MR. KLIPPENSTEIN: Q. If I could ask you  
22 some very general questions about incineration of  
23 municipal waste. Would you agree that typically the  
24 energy obtained from the incineration of a particular  
25 type of municipal waste - and I am recognizing I am

1 speaking generally here - is less than the energy that  
2 is saved when waste is recycled?

3 MR. BROWN: A. I am not aware of the  
4 differences of those two.

5 Q. You obtain a certain amount of energy  
6 when you burn waste?

7 A. That's correct.

8 Q. If you instead recycled that waste so  
9 you didn't have to make that product again -- let me  
10 use an example. Let me use an example of a sheet of  
11 paper. If I burn this piece of paper I would obtain a  
12 certain amount of energy. If instead of burning this  
13 paper I reused it, I would save the energy required to  
14 make another sheet of paper.

15 A. There would be energy involved in the  
16 recycling of it in terms of de-inking and processing  
17 that to produce another blank piece of paper.

18 Q. That's correct.

19 A. I can't compare that, the energy to  
20 do that versus the energy that we would get from  
21 burning it.

22 Q. Let me ask you that specifically.  
23 Can you say with respect to paper, as a general rule,  
24 that the energy obtained from burning paper is more or  
25 less than the energy that is saved by not having to

1 produce another sheet of paper, amount of paper, less  
2 the amount of energy required to recycle it?

3 A. I can't comment on that.

4 Q. Is that because you don't know or is  
5 the question too general?

6 A. I am not aware of the energy consumed  
7 during recycling or those savings that would be in fact  
8 happening during recycling. That is a different  
9 process.

10 Q. Has Hydro done any studies or  
11 reviewed the literature with respect to the question of  
12 whether incineration of waste is, from a global energy  
13 point of view, more or less efficient than recycling?

14 A. I don't believe Hydro would be. I  
15 believe the proponent wishing to do such a project  
16 would have to address these issues.

17 Q. And so for purposes of this plan,  
18 Hydro doesn't say and hasn't studied whether or not  
19 incineration is better than recycling?

20 A. I guess our position on incineration,  
21 that electricity is a by-product. If somebody has a  
22 need to incinerate, we don't question his need or the  
23 approval process. If he does the approval process and  
24 gets approved, we are willing to buy the electricity.  
25 That's a small part of the project, the electricity

1 portion. The major part of the project is the  
2 incineration.

3 Q. Would it not be appropriate, since  
4 this is both a demand and a supply plan of energy, to  
5 actually take into account the cost and the benefits of  
6 both sides of the equation; in other words, the cost of  
7 foregoing recycling in order to burn the waste?

8 MR. B. CAMPBELL: Well, with respect, I  
9 think the witness has answered the question as to  
10 whether or not at least to the best of his knowledge  
11 Ontario Hydro has done such a study. I think the  
12 consequences, if any, that flow from that, I would ask  
13 my friend to leave to argument. The factual matter has  
14 been dealt by the witness.

15 MR. KLIPPENSTEIN: That's fair enough. I  
16 withdraw the question.

17 Mr. Chairman, most of my other questions  
18 actually deal with matters in Exhibit 344, and I  
19 understand they are actually better dealt with in Panel  
20 8, and therefore that may be all my questions for this  
21 panel actually today.

22 THE CHAIRMAN: All right. I take it that  
23 you are satisfied that the questions you do want to ask  
24 will be appropriate for Panel 8?

25 MR. KLIPPENSTEIN: I base that on Exhibit

1       344, which is a fairly comprehensive treatment of  
2       municipal incineration.

3                   THE CHAIRMAN: Let me ask Mr. Campbell.

4                   I take it 344 is the proper subject  
5       matter for cross-examination in Panel 8?

6                   MR. B. CAMPBELL: Yes, it is, Mr.  
7       Chairman. As we have explained at various stages  
8       throughout these proceedings, to the extent that there  
9       are non-utility generation policies that Hydro is or is  
10      not pursuing that could lead to more or less use of  
11      alternative energy generation technologies, the policy  
12      framework within which that could take place is a  
13      proper matter for this panel. But in terms of the  
14      evaluation of the technologies themselves, apart from  
15      dealing with the matters generally, as has been the  
16      case with this panel, we expect to be dealing with that  
17      matter in more detail in Panel 8.

18                  I have spoken to Mr. Klippenstein about  
19      this just briefly before we started this afternoon, and  
20      if his questions have to do with, for instance, the  
21      output of various emissions from incineration  
22      technology, that sort of thing, then the people that  
23      can speak to the combustion process, controls, all of  
24      those matters, certainly Panel 8 will be better  
25      equipped to deal with that, and generally with the

1       nature of the technologies that are covered in that  
2       report. It is going to be witnessed in Panel 8.

3                    MR. KLIPPENSTEIN: I confess that I find  
4       some of the materials in Exhibit 344 quite broad and I  
5       don't know how to deal with them, having just received  
6       some of that material. However, I think that it sounds  
7       like I will be able to deal with them in that panel,  
8       therefore I will leave it at that.

9                    THE CHAIRMAN: Thank you.

10                  MR. KLIPPENSTEIN: Those are my  
11       questions.

12                  THE CHAIRMAN: Thank you.

13                  The next I believe is Energy Probe, which  
14       counsel is coming in from out of town tomorrow.

15                  Anyone here who would like to  
16       cross-examine? Otherwise we will have to adjourn for  
17       the day.

18                  No volunteers? Very well then, we will  
19       adjourn until tomorrow morning at ten o'clock.

20                  THE REGISTRAR: This hearing will adjourn  
21       until ten o'clock tomorrow morning.

22                  ---Whereupon the hearing was adjourned at 3:12 p.m., to  
23       be reconvened on Wednesday, October 30, 1991, at  
24       10:00 a.m.

25                  JAS/KM [c. copyright 1985]

E R R A T A  
and  
C H A N G E S

To: Volume 75

Date: Monday, October 29th, 1991.

Please note that Exhibit 343 was filed by the Coalition of Environmental Groups and not by Ontario Hydro as reported in Volume 75.

We apologize for this inconvenience.







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